EXAMINATION OF CHEMICAL WATER QUALITY IN THE COMMUNITY OF PETIT POKEMOUCHE, N. B.

L. P. PETERS

SEPTEMBER, 1988

GROUNDWATER SECTION
WATER RESOURCE PLANNING BRANCH
NEW BRUNSWICK DEPARTMENT OF MUNICIPAL AFFAIRS
AND ENVIRONMENT

EXAMINATION OF WATER QUALITY

PROBLEMS IN THE PETIT POKEMOUCHE AREA

BACKGROUND

On July 19, 1988, Mr. P. Fournier and Mr. M. Comeau collected samples from the Petit Pokemouche area. In total 18 samples were taken and analysed for chemical quality.

A similar survey was completed in the adjacent community of Le Goulet in 1984 by R. Brinsmead (1). An investigation of the well log report filed with the Department show that most of the wells are shallow and 2 inch diameter.

GROUNDWATER QUALITY

1) Iron and Manganese

A very detailed evaluation of the ground water resources of the Shippegan Island area was completed in the late 60's (2). PH values found in this study are consistent with those found today.

Iron and manganese appeared to be the most obvious and ubiquitous problem. This produces the typical brown staining and may in conjunction with bacterial action produce sulphurous smells.

2) Salt

Salt content (Na, Cl) is in general low, showing that little or no salt water intrusion is occurring at the present time. Deeper wells in the Shippegan area have shown quite high values of sodium and chloride. If this condition is the case in Petit Pokemouche then alternative water supplies may not be easy to find.

3) Nitrate

Several analyses show elevated nitrate values. This is indicative either of septic field or agricultural contamination. The bacterial analyses may sort out which this might be.

4) Turbidity

Several analyses showed turbidity. Some of these were also related to iron and manganese or high nitrate levels.

Conclusions

1) Similar problems were found in Petit Pokemouche to Le Goulet.

2) Alternative water sources may be difficult to find. Protection of existing water sources should be a priority.

References

1) Brinsmead, R.A. Examination of Water Quality Problems in the Community of Le Goulet, N.B. Open file report, Groundwater Section, Water Resources Branch, New Brunswick Department of the Environment, Oct. 1984.

2) Brown, D.D. Hydrogeology of Taylor Island, New Brunswick. Unpublished thesis, University of Western Ontario, 1969.

DEPT. OF MUNICIPAL AFFAIRS AND E[illegible]NMENT WELL WATER CHEMISTRY REPORT/
RAPPORT D'ANALYSE CHIMIQUE D'EAU DE PUITS, DEPT. DES AFFAIRES MUNICIPALES ET DE L'ENVIRONNEMENT

NAME/NOM:
[illegible]

ADDRESS/ADRESSE:
[illegible]

PHONE #/# TÉLÉPHONE:

DATE/DATE: 07/07/88
TIME/TEMPS: [illegible]

FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806074

L MEANS LESS THAN/
MOINS QUE
G MEANS GREATER THAN/
PLUS QUE
A MEANS APPROXIMATE/
APPROXIMATIF

CHEMICAL TEST/ ANALYSE CHIMIQUE		YOUR WELL / VOTRE PUITS RESULTS/ RÉSULTATS	UNITS/ UNITÉS	MAXIMUM ACCEPTABLE LIMITS/ LIMITES MAXIMALES ACCEPTABLES CONCENTRATION	UNITS/UNITÉS
PH/PH ()		6.14	PH	6.5 - 8.5	PH
ALKALINITY,TOTAL/ALKALINITÉ TOTALE (CACO3)		15.39	MG/L	30 - 500	MG/L
TURBITITY/TURBIDITÉ ()		0.4	NTU	5.	NTU
CONDUCTIVITY/CONDUCTIVITÉ ()		747.	USIE/CM		USIE/CM
HARDNESS,CALCULATED/DURETÉ CALCULÉE (CACO3)		60.0	MG/L	200	MG/L
CALCIUM/CALCIUM (CA)		8.26	MG/L	200	MG/L
MAGNESIUM/MAGNESIUM (MG)		9.56	MG/L	150	MG/L
SODIUM/SODIUM (NA)		109.	MG/L	270	MG/L
POTASSIUM/POTASSIUM (K)		3.42	MG/L		MG/L
CHLORIDE/CHLORURE (CL-)		185.	MG/L	250	MG/L
SULFATE/SULFATE (SO4)		33.	MG/L	500	MG/L
FLUORIDE/FLUORURE (F-)	L	.10	MG/L	1.5	MG/L
NITRATE-NITRITE/NITRATE-NITRITE (N)		.75	MG/L	10	MG/L
IRON/FER (FE)		.237	MG/L	.300	MG/L
MANGANESE/MANGANESE (MN)	*	.223	MG/L	0.05	MG/L
COPPER/CUIVRE (CU)		.307	MG/L	1.0	MG/L
ZINC/ZINC (ZN)		.394	MG/L	5.0	MG/L
LEAD/PLOMB (PB)		5.0	UG/L	50.	UG/L

PROP NO/NO. DE PROJET: 102
EVENT NO/ÉVENEMENT: 83

PROP NAME/NOM DE PROJET:
NB DOMESTIC WATER SUPPLY

MANAGER/DIRECTEUR DE PROJET:
GEORGE RICHARD

STATION NUMBER/
NUMÉRO DE STATION:
ZTROBICHAUD

LAB NO/NO. DE LAB: 5106g

FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806074

DATE DUE: 88.08.08
DATE REC: 88.07.25
DATE FWD/ 88.08.22
DATE D'ENVOI:

DAYS TURNAROUND/
JOURS AU LABORATOIRE:
28

REMARKS/
REMARQUES: Sample #1

* INDICATES GREATER THAN ACCEPTABLE LIMIT / VEUT DIRE PLUS GRAND QUE LA LIMITE ACCEPTABLE

DEPT. OF MUNICIPAL AFFAIRS AND ENVIRONMENT WELL WATER CHEMISTRY REPORT/
RAPPORT D'ANALYSE CHIMIQUE D'EAU DE PUITS, DEPT. DES AFFAIRES MUNICIPALES ET DE L'ENVIRONNEMENT

CHEMICAL TEST/ ANALYSE CHIMIQUE	YOUR WELL / VOTRE PUITS RESULTS/ RÉSULTATS	UNITS/ UNITÉS	MAXIMUM ACCEPTABLE LIMITS/ LIMITES MAXIMALES ACCEPTABLES CONCENTRATION	UNITS/UNITÉS
PH/PH ()	6.35	PH	6.5 - 8.5	PH
ALKALINITY,TOTAL/ALKALINITÉ TOTALE (CACO3)	15.29	MG/L	30 - 500	MG/L
TURBITITY/TURBIDITÉ ()	0.2	NTU	5.	NTU
CONDUCTIVITY/CONDUCTIVITÉ ()	125.6	USIE/CM		USIE/CM
HARDNESS,CALCULATED/DURETÉ CALCULÉE (CACO3)	36.2	MG/L	200	MG/L
CALCIUM/CALCIUM (CA)	9.08	MG/L	200	MG/L
MAGNESIUM/MAGNESIUM (MG)	3.28	MG/L	150	MG/L
SODIUM/SODIUM (NA)	8.25	MG/L	270	MG/L
POTASSIUM/POTASSIUM (K)	.914	MG/L		MG/L
CHLORIDE/CHLORURE (CL-)	10.7	MG/L	250	MG/L
SULFATE/SULFATE (SO4)	11.3	MG/L	500	MG/L
FLUORIDE/FLUORURE (F-)	L .10	MG/L	1.5	MG/L
NITRATE-NITRITE/NITRATE-NITRITE (N)	3.4	MG/L	10	MG/L
IRON/FER (FE)	.096	MG/L	.300	MG/L
MANGANESE/MANGANESE (MN)	.029	MG/L	0.05	MG/L
COPPER/CUIVRE (CU)	.164	MG/L	1.0	MG/L
ZINC/ZINC (ZN)	.169	MG/L	5.0	MG/L
LEAD/PLOMB (PB)	T 1.4	UG/L	50.	UG/L
NITRITE/NITRITE (N)	.09	MG/L		MG/L

NAME/NOM:
Rejean Duguay
ADDRESS/ADRESSE:
Bois du Pt. à Bateaux
C.P. 942
Le Chemin, N-B
E0E 1E0
PHONE #/# TÉLÉPHONE:
DATE/DATE: 11/07/88
TIME/TEMPS: 10:30 hrs
FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806075

L MEANS LESS THAN/ MOINS QUE
G MEANS GREATER THAN/ PLUS QUE
A MEANS APPROXIMATE/ APPROXIMATIF

(2)

REMARKS/ Empty C
REMARQUES:

PROP NO/NO. DE PROJET: 102
EVENT NO/ÉVENEMENT: 83
PROP NAME/NOM DE PROJET:
NB DOMESTIC WATER SUPPLY
MANAGER/DIRECTEUR DE PROJET:
GEORGE RICHARD
STATION NUMBER/
NUMÉRO DE STATION:
ZREJEANDUGUAY
LAB NO/NO. DE LAB: 5107g
FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806075
DATE DUE: 88.08.08
DATE REC: 88.07.25
DATE FWD/ 88.08.22
DATE D'ENVOI:
DAYS TURNAROUND/
JOURS AU LABORATOIRE:
28

* INDICATES GREATER THAN ACCEPTABLE LIMIT / VEUT DIRE PLUS GRAND QUE LA LIMITE ACCEPTABLE

DEPT. OF MUNICIPAL AFFAIRS AND ENVIRONMENT WELL WATER CHEMISTRY REPORT/
RAPPORT D'ANALYSE CHIMIQUE D'EAU DE PUITS, DEPT. DES AFFAIRES MUNICIPALES ET DE L'ENVIRONNEMENT

NAME/NOM:
Roger Robichaud
ADDRESS/ADRESSE:
C.P. 702
Baie de Petit Rocher
Zappa, N.B.
E0B 1Y0
PHONE #/# TÉLÉPHONE:
DATE/DATE: 07/07/88
TIME/TEMPS: 1040 hre.
FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806076

L MEANS LESS THAN/ MOINS QUE
G MEANS GREATER THAN/ PLUS QUE
A MEANS APPROXIMATE/ APPROXIMATIF

CHEMICAL TEST/ ANALYSE CHIMIQUE		YOUR WELL / VOTRE PUITS RESULTS/ RÉSULTATS	UNITS/ UNITÉS	MAXIMUM ACCEPTABLE LIMITS/ LIMITES MAXIMALES ACCEPTABLES CONCENTRATION	UNITS/UNITÉS
PH/PH ()		6.81	PH	6.5 - 8.5	PH
ALKALINITY,TOTAL/ALKALINITÉ TOTALE (CACO3)		56.73	MG/L	30 - 500	MG/L
TURBITITY/TURBIDITÉ ()		0.2	NTU	5.	NTU
CONDUCTIVITY/CONDUCTIVITÉ ()		179.	USIE/CM		USIE/CM
HARDNESS,CALCULATED/DURETÉ CALCULÉE (CACO3)		61.6	MG/L	200	MG/L
CALCIUM/CALCIUM (CA)		18.2	MG/L	200	MG/L
MAGNESIUM/MAGNESIUM (MG)		3.92	MG/L	150	MG/L
SODIUM/SODIUM (NA)		9.34	MG/L	270	MG/L
POTASSIUM/POTASSIUM (K)		.530	MG/L		MG/L
CHLORIDE/CHLORURE (CL-)		13.5	MG/L	250	MG/L
SULFATE/SULFATE (SO4)		7.7	MG/L	500	MG/L
FLUORIDE/FLUORURE (F-)		L .10	MG/L	1.5	MG/L
NITRATE-NITRITE/NITRATE-NITRITE (N)		.82	MG/L	10	MG/L
IRON/FER (FE)		.071	MG/L	.300	MG/L
MANGANESE/MANGANESE (MN)	*	.259	MG/L	0.05	MG/L
COPPER/CUIVRE (CU)		.141	MG/L	1.0	MG/L
ZINC/ZINC (ZN)		2.08	MG/L	5.0	MG/L
LEAD/PLOMB (PB)		6.2	UG/L	50.	UG/L

(3)

PROP NO/NO. DE PROJET: 102
EVENT NO/ÉVENEMENT: 83
PROP NAME/NOM DE PROJET:
NB DOMESTIC WATER SUPPLY
MANAGER/DIRECTEUR DE PROJET:
GEORGE RICHARD
STATION NUMBER/
NUMÉRO DE STATION:
ZRROBICHAUD
LAB NO/NO. DE LAB: 5108g
FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806076
DATE DUE: 88.08.08
DATE REC: 88.07.25
DATE FWD/ 88.08.22
DATE D'ENVOI:
DAYS TURNAROUND/
JOURS AU LABORATOIRE:
28

REMARKS/ Sample #3
REMARQUES:
* INDICATES GREATER THAN ACCEPTABLE LIMIT / VEUT DIRE PLUS GRAND QUE LA LIMITE ACCEPTABLE

RAPPORT D'ANALYSE CHIMIQUE D'EAU DE PUITS, DEPT. DES AFFAIRES MUNICIPALES ET DE L'ENVIRONNEMENT

CHEMICAL TEST/ ANALYSE CHIMIQUE	YOUR WELL / VOTRE PUITS RESULTS/ RÉSULTATS	UNITS/ UNITÉS	MAXIMUM ACCEPTABLE LIMITS/ LIMITES MAXIMALES ACCEPTABLES CONCENTRATION	UNITS/UNITÉS
PH/PH ()	6.72	PH	6.5 - 8.5	PH
ALKALINITY,TOTAL/ALKALINITÉ TOTALE (CACO3)	32.67	MG/L	30 - 500	MG/L
TURBITITY/TURBIDITÉ ()	0.4	NTU	5.	NTU
CONDUCTIVITY/CONDUCTIVITÉ ()	232.	USIE/CM		USIE/CM
HARDNESS,CALCULATED/DURETÉ CALCULÉE (CACO3)	63.7	MG/L	200	MG/L
CALCIUM/CALCIUM (CA)	17.5	MG/L	200	MG/L
MAGNESIUM/MAGNESIUM (MG)	4.85	MG/L	150	MG/L
SODIUM/SODIUM (NA)	16.0	MG/L	270	MG/L
POTASSIUM/POTASSIUM (K)	2.22	MG/L		MG/L
CHLORIDE/CHLORURE (CL-)	31.8	MG/L	250	MG/L
SULFATE/SULFATE (SO4)	9.6	MG/L	500	MG/L
FLUORIDE/FLUORURE (F-)	L .10	MG/L	1.5	MG/L
NITRATE-NITRITE/NITRATE-NITRITE (N)	4.1	MG/L	10	MG/L
IRON/FER (FE)	.104	MG/L	.300	MG/L
MANGANESE/MANGANESE (MN)	.015	MG/L	0.05	MG/L
COPPER/CUIVRE (CU)	.122	MG/L	1.0	MG/L
ZINC/ZINC (ZN)	.164	MG/L	5.0	MG/L
LEAD/PLOMB (PB)	T .6	UG/L	50.	UG/L
NITRITE/NITRITE (N)	.02	MG/L		MG/L

NAME/NOM:

ADDRESS/ADRESSE:

PHONE #/# TÉLÉPHONE:

DATE/DATE: 7/27/83
TIME/TEMPS:

FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806077

L MEANS LESS THAN/
MOINS QUE
G MEANS GREATER THAN/
PLUS QUE
A MEANS APPROXIMATE/
APPROXIMATIF

REMARKS/
REMARQUES:

PROP NO/NO. DE PROJET: 102
EVENT NO/ÉVENEMENT: 83

PROP NAME/NOM DE PROJET:
NB DOMESTIC WATER SUPPLY

MANAGER/DIRECTEUR DE PROJET:
GEORGE RICHARD

STATION NUMBER/
NUMÉRO DE STATION:
ZGROBICHAUD

LAB NO/NO. DE LAB: 5109g

FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806077

DATE DUE: 88.08.08
DATE REC: 88.07.25
DATE FWD/ 88.08.22
DATE D'ENVOI:

DAYS TURNAROUND/
JOURS AU LABORATOIRE:
28

* INDICATES GREATER THAN ACCEPTABLE LIMIT / VEUT DIRE PLUS GRAND QUE LA LIMITE ACCEPTABLE

DEPT. OF MUNICIPAL AFFAIRS AND ENVIRONMENT WELL WATER CHEMISTRY REPORT/
RAPPORT D'ANALYSE CHIMIQUE D'EAU DE PUITS, DEPT. DES AFFAIRES MUNICIPALES ET DE L'ENVIRONNEMENT

NAME/NOM:
Léo Richard

ADDRESS/ADRESSE:
C.P. 74
Ste de Kent Intermont
Shediac, N.-B.
E0A 3C0

PHONE #/# TÉLÉPHONE:

DATE/DATE: Nov 88
TIME/TEMPS: PM

FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806078

L MEANS LESS THAN/
MOINS QUE
G MEANS GREATER THAN/
PLUS QUE
A MEANS APPROXIMATE/
APPROXIMATIF

(5)

REMARKS/ Sample
REMARQUES:

CHEMICAL TEST/ ANALYSE CHIMIQUE	YOUR WELL / VOTRE PUITS RESULTS/ RÉSULTATS	UNITS/ UNITÉS	MAXIMUM ACCEPTABLE LIMITS/ LIMITES MAXIMALES ACCEPTABLES CONCENTRATION	UNITS/UNITÉS
PH/PH ()	6.67	PH	6.5 - 8.5	PH
ALKALINITY,TOTAL/ALKALINITÉ TOTALE (CACO3)	56.57	MG/L	30 - 500	MG/L
TURBITITY/TURBIDITÉ ()	0.1	NTU	5.	NTU
CONDUCTIVITY/CONDUCTIVITÉ ()	244.	USIE/CM		USIE/CM
HARDNESS,CALCULATED/DURETÉ CALCULÉE (CACO3)	78.0	MG/L	200	MG/L
CALCIUM/CALCIUM (CA)	22.3	MG/L	200	MG/L
MAGNESIUM/MAGNESIUM (MG)	5.43	MG/L	150	MG/L
SODIUM/SODIUM (NA)	14.0	MG/L	270	MG/L
POTASSIUM/POTASSIUM (K)	2.61	MG/L		MG/L
CHLORIDE/CHLORURE (CL-)	25.5	MG/L	250	MG/L
SULFATE/SULFATE (SO4)	9.0	MG/L	500	MG/L
FLUORIDE/FLUORURE (F-)	L .10	MG/L	1.5	MG/L
NITRATE-NITRITE/NITRATE-NITRITE (N)	2.9	MG/L	10	MG/L
IRON/FER (FE)	.064	MG/L	.300	MG/L
MANGANESE/MANGANESE (MN)	* .625	MG/L	0.05	MG/L
COPPER/CUIVRE (CU)	.068	MG/L	1.0	MG/L
ZINC/ZINC (ZN)	.143	MG/L	5.0	MG/L
LEAD/PLOMB (PB)	T 1.5	UG/L	50.	UG/L
NITRITE/NITRITE (N)	T .01	MG/L		MG/L

PROP NO/NO. DE PROJET: 102
EVENT NO/ÉVENEMENT: 83

PROP NAME/NOM DE PROJET:
NB DOMESTIC WATER SUPPLY

MANAGER/DIRECTEUR DE PROJET:
GEORGE RICHARD

STATION NUMBER/
NUMÉRO DE STATION:
ZTHEOROBICHAUD

LAB NO/NO. DE LAB: 5110g

FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806078

DATE DUE: 88.08.08
DATE REC: 88.07.25
DATE FWD/ 88.08.22
DATE D'ENVOI:

DAYS TURNAROUND/
JOURS AU LABORATOIRE:
28

* INDICATES GREATER THAN ACCEPTABLE LIMIT / VEUT DIRE PLUS GRAND QUE LA LIMITE ACCEPTABLE

RAPPORT D'ANALYSE CHIMIQUE D'EAU DE PUITS, DEPT. DES AFFAIRES MUNICIPALES ET DE L'ENVIRONNEMENT

NAME/NOM:
Rhané Arsenault

ADDRESS/ADRESSE:
C.P. 72
Route Bleu Lakemarine
Shippagan, N.-B.
E8S 2P3

PHONE #/# TÉLÉPHONE:

DATE/DATE: M/D/YY 83
TIME/TEMPS: 11:35 AM

FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806079

L MEANS LESS THAN/
MOINS QUE
G MEANS GREATER THAN/
PLUS QUE
A MEANS APPROXIMATE/
APPROXIMATIF

(7)

REMARKS/
REMARQUES: Sample 1

CHEMICAL TEST/ ANALYSE CHIMIQUE		YOUR WELL / VOTRE PUITS RESULTS/ RÉSULTATS	UNITS/ UNITÉS	MAXIMUM ACCEPTABLE LIMITS/ LIMITES MAXIMALES ACCEPTABLES CONCENTRATION	UNITS/UNITÉS
PH/PH ()		7.00	PH	6.5 - 8.5	PH
ALKALINITY,TOTAL/ALKALINITÉ TOTALE (CACO3)		82.26	MG/L	30 - 500	MG/L
TURBITITY/TURBIDITÉ ()		0.3	NTU	5.	NTU
CONDUCTIVITY/CONDUCTIVITÉ ()		377.	USIE/CM		USIE/CM
HARDNESS,CALCULATED/DURETÉ CALCULÉE (CACO3)		126.8	MG/L	200	MG/L
CALCIUM/CALCIUM (CA)		40.0	MG/L	200	MG/L
MAGNESIUM/MAGNESIUM (MG)		6.54	MG/L	150	MG/L
SODIUM/SODIUM (NA)		18.8	MG/L	270	MG/L
POTASSIUM/POTASSIUM (K)		3.59	MG/L		MG/L
CHLORIDE/CHLORURE (CL-)		35.4	MG/L	250	MG/L
SULFATE/SULFATE (SO4)		14.4	MG/L	500	MG/L
FLUORIDE/FLUORURE (F-)	L	.10	MG/L	1.5	MG/L
NITRATE-NITRITE/NITRATE-NITRITE (N)		8.0	MG/L	10	MG/L
IRON/FER (FE)		.052	MG/L	.300	MG/L
MANGANESE/MANGANESE (MN)	*	.056	MG/L	0.05	MG/L
COPPER/CUIVRE (CU)		.266	MG/L	1.0	MG/L
ZINC/ZINC (ZN)		.157	MG/L	5.0	MG/L
LEAD/PLOMB (PB)		14.2	UG/L	50.	UG/L
NITRITE/NITRITE (N)		.03	MG/L		MG/L

PROP NO/NO. DE PROJET: 102
EVENT NO/ÉVENEMENT: 83

PROP NAME/NOM DE PROJET:
NB DOMESTIC WATER SUPPLY

MANAGER/DIRECTEUR DE PROJET:
GEORGE RICHARD

STATION NUMBER/
NUMÉRO DE STATION:
ZRHEALHEBET

LAB NO/NO. DE LAB: 5111g

FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806079

DATE DUE: 88.08.08
DATE REC: 88.07.25
DATE FWD/ 88.08.22
DATE D'ENVOI:

DAYS TURNAROUND/
JOURS AU LABORATOIRE:
28

* INDICATES GREATER THAN ACCEPTABLE LIMIT / VEUT DIRE PLUS GRAND QUE LA LIMITE ACCEPTABLE

DEPT. OF MUNICIPAL AFFAIRS AND ENV...IENT WELL WATER CHEMISTRY REPORT/
RAPPORT D'ANALYSE CHIMIQUE D'EAU DE PUITS, DEPT. DES AFFAIRES MUNICIPALES ET DE L'ENVIRONNEMENT

NAME/NOM:
Louis Hebert
ADDRESS/ADRESSE:
C.P. 198
Goulet,
Baie de Petit Pokemouche)
B. E0B 1W0
PHONE #/# TÉLÉPHONE:
536-8033
DATE/DATE: 14/07/88
TIME/TEMPS: 1300 heures
FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806069

L MEANS LESS THAN/
MOINS QUE
G MEANS GREATER THAN/
PLUS QUE
A MEANS APPROXIMATE/
APPROXIMATIF

(8)

Suite page 8

CHEMICAL TEST/ ANALYSE CHIMIQUE	YOUR WELL / VOTRE PUITS RESULTS/ RÉSULTATS	UNITS/ UNITÉS	MAXIMUM ACCEPTABLE LIMITS/ LIMITES MAXIMALES ACCEPTABLES CONCENTRATION	UNITS/UNITÉS
PH/PH ()	6.83	PH	6.5 - 8.5	PH
ALKALINITY,TOTAL/ALKALINITÉ TOTALE (CACO3)	48.31	MG/L	30 - 500	MG/L
TURBITTITY/TURBIDITÉ ()	.0	NTU	5.	NTU
CONDUCTIVITY/CONDUCTIVITÉ ()	275.	USIE/CM		USIE/CM
HARDNESS,CALCULATED/DURETÉ CALCULÉE (CACO3)	89.9	MG/L	200	MG/L
CALCIUM/CALCIUM (CA)	27.1	MG/L	200	MG/L
MAGNESIUM/MAGNESIUM (MG)	5.40	MG/L	150	MG/L
SODIUM/SODIUM (NA)	15.9	MG/L	270	MG/L
POTASSIUM/POTASSIUM (K)	2.42	MG/L		MG/L
CHLORIDE/CHLORURE (CL-)	33.2	MG/L	250	MG/L
SULFATE/SULFATE (SO4)	11.9	MG/L	500	MG/L
FLUORIDE/FLUORURE (F-)	L 0.10	MG/L	1.5	MG/L
NITRATE-NITRITE/NITRATE-NITRITE (N)	5.7	MG/L	10	MG/L
IRON/FER (FE)	T -.034	MG/L	.300	MG/L
MANGANESE/MANGANESE (MN)	T -.001	MG/L	0.05	MG/L
COPPER/CUIVRE (CU)	.096	MG/L	1.0	MG/L
ZINC/ZINC (ZN)	.050	MG/L	5.0	MG/L
LEAD/PLOMB (PB)	T 1.1	UG/L	50.	UG/L

PROP NO/NO. DE PROJET: 102
EVENT NO/ÉVENEMENT: 79
PROP NAME/NOM DE PROJET:
NB DOMESTIC WATER SUPPLY
MANAGER/DIRECTEUR DE PROJET:
GEORGE RICHARD
STATION NUMBER/
NUMÉRO DE STATION:
ZLOUISEHEBERT
LAB NO/NO. DE LAB: 4934g
FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806069
DATE DUE: 88.08.03
DATE REC: 88.07.20
DATE FWD/ 88.08.09
DATE D'ENVOI:
DAYS TURNAROUND/
JOURS AU LABORATOIRE:
20

REMARKS/
REMARQUES:
* INDICATES GREATER THAN ACCEPTABLE LIMIT / VEUT DIRE PLUS GRAND QUE LA LIMITE ACCEPTABLE

DEPT. OF MUNICIPAL AFFAIRS AND ENVIRONMENT WELL WATER CHEMISTRY REPORT/
RAPPORT D'ANALYSE CHIMIQUE D'EAU DE PUITS, DEPT. DES AFFAIRES MUNICIPALES ET DE L'ENVIRONNEMENT

NAME/NOM:
[illegible]

ADDRESS/ADRESSE:
C.P. 7...
[illegible]

PHONE #/# TÉLÉPHONE:

DATE/DATE: [illegible]
TIME/TEMPS:

FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806080

L MEANS LESS THAN/
MOINS QUE
G MEANS GREATER THAN/
PLUS QUE
A MEANS APPROXIMATE/
APPROXIMATIF

(9)

CHEMICAL TEST/ ANALYSE CHIMIQUE		YOUR WELL / VOTRE PUITS RESULTS/ RÉSULTATS	UNITS/ UNITÉS	MAXIMUM ACCEPTABLE LIMITS/ LIMITES MAXIMALES ACCEPTABLES CONCENTRATION	UNITS/UNITÉS
PH/PH ()		6.43	PH	6.5 - 8.5	PH
ALKALINITY,TOTAL/ALKALINITÉ TOTALE (CACO3)		15.82	MG/L	30 - 500	MG/L
TURBITITY/TURBIDITÉ ()		0.8	NTU	5.	NTU
CONDUCTIVITY/CONDUCTIVITÉ ()		109.5	USIE/CM		USIE/CM
HARDNESS,CALCULATED/DURETÉ CALCULÉE (CACO3)		24.1	MG/L	200	MG/L
CALCIUM/CALCIUM (CA)		6.09	MG/L	200	MG/L
MAGNESIUM/MAGNESIUM (MG)		2.17	MG/L	150	MG/L
SODIUM/SODIUM (NA)		9.17	MG/L	270	MG/L
POTASSIUM/POTASSIUM (K)		.558	MG/L		MG/L
CHLORIDE/CHLORURE (CL-)		17.0	MG/L	250	MG/L
SULFATE/SULFATE (SO4)		6.1	MG/L	500	MG/L
FLUORIDE/FLUORURE (F-)	L	.10	MG/L	1.5	MG/L
NITRATE-NITRITE/NITRATE-NITRITE (N)		.70	MG/L	10	MG/L
IRON/FER (FE)	*	.795	MG/L	.300	MG/L
MANGANESE/MANGANESE (MN)	*	.886	MG/L	0.05	MG/L
COPPER/CUIVRE (CU)		.229	MG/L	1.0	MG/L
ZINC/ZINC (ZN)		.027	MG/L	5.0	MG/L
LEAD/PLOMB (PB)	T	1.0	UG/L	50.	UG/L

PROP NO/NO. DE PROJET: 102
EVENT NO/ÉVENEMENT: 83

PROP NAME/NOM DE PROJET:
NB DOMESTIC WATER SUPPLY

MANAGER/DIRECTEUR DE PROJET:
GEORGE RICHARD

STATION NUMBER/
NUMÉRO DE STATION:
ZGILLESHEBERT

LAB NO/NO. DE LAB: 5112g

FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806080

DATE DUE: 88.08.08
DATE REC: 88.07.25
DATE FWD/ 88.08.22
DATE D'ENVOI:

DAYS TURNAROUND/
JOURS AU LABORATOIRE:
28

REMARKS/
REMARQUES:

* INDICATES GREATER THAN ACCEPTABLE LIMIT / VEUT DIRE PLUS GRAND QUE LA LIMITE ACCEPTABLE

DEPT. OF MUNICIPAL AFFAIRS AND ENVIRONMENT WELL WATER CHEMISTRY REPORT/

RAPPORT D'ANALYSE CHIMIQUE D'EAU DE PUITS, DEPT. DES AFFAIRES MUNICIPALES ET DE L'ENVIRONNEMENT

NAME/NOM:
Eric Bérubé

ADDRESS/ADRESSE:
C I 7 E
Eric Bérubé
Shippagan N E
E 0 C 1

PHONE #/# TÉLÉPHONE:

DATE/DATE: 88/07/25
TIME/TEMPS:

FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806081

L MEANS LESS THAN/
MOINS QUE
G MEANS GREATER THAN/
PLUS QUE
A MEANS APPROXIMATE/
APPROXIMATIF

10

REMARKS/
REMARQUES:

CHEMICAL TEST/ ANALYSE CHIMIQUE	YOUR WELL / VOTRE PUITS RESULTS/ RÉSULTATS	UNITS/ UNITÉS	MAXIMUM ACCEPTABLE LIMITS/ LIMITES MAXIMALES ACCEPTABLES CONCENTRATION	UNITS/UNITÉS
PH/PH ()	6.58	PH	6.5 - 8.5	PH
ALKALINITY,TOTAL/ALKALINITÉ TOTALE (CACO3)	29.05	MG/L	30 - 500	MG/L
TURBITITY/TURBIDITÉ ()	0.7	NTU	5.	NTU
CONDUCTIVITY/CONDUCTIVITÉ ()	212.	USIE/CM		USIE/CM
HARDNESS,CALCULATED/DURETÉ CALCULÉE (CACO3)	56.1	MG/L	200	MG/L
CALCIUM/CALCIUM (CA)	14.0	MG/L	200	MG/L
MAGNESIUM/MAGNESIUM (MG)	5.13	MG/L	150	MG/L
SODIUM/SODIUM (NA)	14.8	MG/L	270	MG/L
POTASSIUM/POTASSIUM (K)	2.57	MG/L		MG/L
CHLORIDE/CHLORURE (CL-)	25.3	MG/L	250	MG/L
SULFATE/SULFATE (SO4)	16.0	MG/L	500	MG/L
FLUORIDE/FLUORURE (F-)	L .10	MG/L	1.5	MG/L
NITRATE-NITRITE/NITRATE-NITRITE (N)	3.5	MG/L	10	MG/L
IRON/FER (FE)	.190	MG/L	.300	MG/L
MANGANESE/MANGANESE (MN)	.032	MG/L	0.05	MG/L
COPPER/CUIVRE (CU)	.101	MG/L	1.0	MG/L
ZINC/ZINC (ZN)	.447	MG/L	5.0	MG/L
LEAD/PLOMB (PB)	5.5	UG/L	50.	UG/L
NITRITE/NITRITE (N)	T .01	MG/L		MG/L

PROP NO/NO. DE PROJET: 102
EVENT NO/ÉVENEMENT: 83

PROP NAME/NOM DE PROJET:
NB DOMESTIC WATER SUPPLY

MANAGER/DIRECTEUR DE PROJET:
GEORGE RICHARD

STATION NUMBER/
NUMÉRO DE STATION:
ZIUCIEROBICHAUD

LAB NO/NO. DE LAB: 5113g

FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806081

DATE DUE: 88.08.08
DATE REC: 88.07.25
DATE FWD/ 88.08.22
DATE D'ENVOI:

DAYS TURNAROUND/
JOURS AU LABORATOIRE:
28

* INDICATES GREATER THAN ACCEPTABLE LIMIT / VEUT DIRE PLUS GRAND QUE LA LIMITE ACCEPTABLE

DEPT. OF MUNICIPAL AFFAIRS AND ENVIRONMENT WELL WATER CHEMISTRY REPORT/
RAPPORT D'ANALYSE CHIMIQUE D'EAU DE PUITS, DEPT. DES AFFAIRES MUNICIPALES ET DE L'ENVIRONNEMENT

NAME/NOM:
Gloria St Laurent
ADDRESS/ADRESSE:
C.P. 713
Shippagan, N.B.
E8S 3L9

PHONE #/# TÉLÉPHONE:

DATE/DATE: 88.07.18
TIME/TEMPS: 10:00 matin

FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806082

L MEANS LESS THAN/
MOINS QUE
G MEANS GREATER THAN/
PLUS QUE
A MEANS APPROXIMATE/
APPROXIMATIF

(12)

CHEMICAL TEST/ ANALYSE CHIMIQUE	YOUR WELL / VOTRE PUITS RESULTS/ RÉSULTATS	UNITS/ UNITÉS	MAXIMUM ACCEPTABLE LIMITS/ LIMITES MAXIMALES ACCEPTABLES CONCENTRATION	UNITS/UNITÉS
PH/PH ()	6.24	PH	6.5 - 8.5	PH
ALKALINITY,TOTAL/ALKALINITÉ TOTALE (CACO3)	5.30	MG/L	30 - 500	MG/L
TURBITITY/TURBIDITÉ ()	0.0	NTU	5.	NTU
CONDUCTIVITY/CONDUCTIVITÉ ()	85.8	USIE/CM		USIE/CM
HARDNESS,CALCULATED/DURETÉ CALCULÉE (CACO3)	14.9	MG/L	200	MG/L
CALCIUM/CALCIUM (CA)	2.58	MG/L	200	MG/L
MAGNESIUM/MAGNESIUM (MG)	2.05	MG/L	150	MG/L
SODIUM/SODIUM (NA)	8.57	MG/L	270	MG/L
POTASSIUM/POTASSIUM (K)	.868	MG/L		MG/L
CHLORIDE/CHLORURE (CL-)	16.4	MG/L	250	MG/L
SULFATE/SULFATE (SO4)	6.1	MG/L	500	MG/L
FLUORIDE/FLUORURE (F-)	L .10	MG/L	1.5	MG/L
NITRATE-NITRITE/NITRATE-NITRITE (N)	.53	MG/L	10	MG/L
IRON/FER (FE)	.076	MG/L	.300	MG/L
MANGANESE/MANGANESE (MN)	.018	MG/L	0.05	MG/L
COPPER/CUIVRE (CU)	.119	MG/L	1.0	MG/L
ZINC/ZINC (ZN)	.022	MG/L	5.0	MG/L
LEAD/PLOMB (PB)	T 0.4	UG/L	50.	UG/L

PROP NO/NO. DE PROJET: 102
EVENT NO/ÉVENEMENT: 83

PROP NAME/NOM DE PROJET:
NB DOMESTIC WATER SUPPLY

MANAGER/DIRECTEUR DE PROJET:
GEORGE RICHARD

STATION NUMBER/
NUMÉRO DE STATION:
ZGLORIASTLAUREN

LAB NO/NO. DE LAB: 5114g

FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806082

DATE DUE: 88.08.08
DATE REC: 88.07.25
DATE FWD/ 88.08.22
DATE D'ENVOI:

DAYS TURNAROUND/
JOURS AU LABORATOIRE:
28

REMARKS/
REMARQUES:

* INDICATES GREATER THAN ACCEPTABLE LIMIT / VEUT DIRE PLUS GRAND QUE LA LIMITE ACCEPTABLE

DEPT. OF MUNICIPAL AFFAIRS AND ENVIR...ENT WELL WATER CHEMISTRY REPORT/
RAPPORT D'ANALYSE CHIMIQUE D'EAU DE PUITS, DEPT. DES AFFAIRES MUNICIPALES ET DE L'ENVIRONNEMENT

NAME/NOM:
Valerie Robichaud

ADDRESS/ADRESSE:
C.P. 247
Le Goulet,
Baie de Petit Rocmouche)
I.B. E0B 1W0

PHONE #/# TÉLÉPHONE:

DATE/DATE: 18/07/88
TIME/TEMPS: 0830 hours

FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806071

L MEANS LESS THAN/
MOINS QUE
G MEANS GREATER THAN/
PLUS QUE
A MEANS APPROXIMATE/
APPROXIMATIF

(13)
Sample 13

CHEMICAL TEST/ ANALYSE CHIMIQUE		YOUR WELL / VOTRE PUITS RESULTS/ RÉSULTATS	UNITS/ UNITÉS	MAXIMUM ACCEPTABLE LIMITS/ LIMITES MAXIMALES ACCEPTABLES CONCENTRATION	UNITS/UNITÉS
PH/PH ()		6.67	PH	6.5 - 8.5	PH
ALKALINITY,TOTAL/ALKALINITÉ TOTALE (CACO3)		45.16	MG/L	30 - 500	MG/L
TURBITITY/TURBIDITÉ ()	*	8.7	NTU	5.	NTU
CONDUCTIVITY/CONDUCTIVITÉ ()		156.	USIE/CM		USIE/CM
HARDNESS,CALCULATED/DURETÉ CALCULÉE (CACO3)		35.8	MG/L	200	MG/L
CALCIUM/CALCIUM (CA)		10.2	MG/L	200	MG/L
MAGNESIUM/MAGNESIUM (MG)		2.52	MG/L	150	MG/L
SODIUM/SODIUM (NA)		10.3	MG/L	270	MG/L
POTASSIUM/POTASSIUM (K)		.585	MG/L		MG/L
CHLORIDE/CHLORURE (CL-)		15.8	MG/L	250	MG/L
SULFATE/SULFATE (SO4)		7.1	MG/L	500	MG/L
FLUORIDE/FLUORURE (F-)	L	0.10	MG/L	1.5	MG/L
NITRATE-NITRITE/NITRATE-NITRITE (N)		.31	MG/L	10	MG/L
IRON/FER (FE)	*	3.52	MG/L	.300	MG/L
MANGANESE/MANGANESE (MN)	*	6.55	MG/L	0.05	MG/L
COPPER/CUIVRE (CU)		.098	MG/L	1.0	MG/L
ZINC/ZINC (ZN)	T	.007	MG/L	5.0	MG/L
LEAD/PLOMB (PB)		2.5	UG/L	50.	UG/L

PROP NO/NO. DE PROJET: 102
EVENT NO/ÉVENEMENT: 80

PROP NAME/NOM DE PROJET:
NB DOMESTIC WATER SUPPLY

MANAGER/DIRECTEUR DE PROJET:
GEORGE RICHARD

STATION NUMBER/
NUMÉRO DE STATION:
ZMROBICHAUD

LAB NO/NO. DE LAB: 4982g

FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806071

DATE DUE: 88.08.03
DATE REC: 88.07.20
DATE FWD/ 88.08.09
DATE D'ENVOI:

DAYS TURNAROUND/
JOURS AU LABORATOIRE:
20

REMARKS/
REMARQUES:
* INDICATES GREATER THAN ACCEPTABLE LIMIT / VEUT DIRE PLUS GRAND QUE LA LIMITE ACCEPTABLE

DEPT. OF MUNICIPAL AFFAIRS AND ENVIRONMENT WELL WATER CHEMISTRY REPORT/

RAPPORT D'ANALYSE CHIMIQUE D'EAU DE PUITS, DEPT. DES AFFAIRES MUNICIPALES ET DE L'ENVIRONNEMENT

NAME/NOM:
Victor Bouchard

ADDRESS/ADRESSE:
C.P. 92
Shippagan, N.B.
E8S 3L1

PHONE #/# TÉLÉPHONE:

DATE/DATE: 88/07/28
TIME/TEMPS: 12:15 hrs

FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806083

L MEANS LESS THAN/
MOINS QUE
G MEANS GREATER THAN/
PLUS QUE
A MEANS APPROXIMATE/
APPROXIMATIF

CHEMICAL TEST/ ANALYSE CHIMIQUE	YOUR WELL / VOTRE PUITS RESULTS/ RÉSULTATS	UNITS/ UNITÉS	MAXIMUM ACCEPTABLE LIMITS/ LIMITES MAXIMALES ACCEPTABLES CONCENTRATION	UNITS/UNITÉS
PH/PH ()	6.59	PH	6.5 - 8.5	PH
ALKALINITY,TOTAL/ALKALINITÉ TOTALE (CACO3)	33.99	MG/L	30 - 500	MG/L
TURBITITY/TURBIDITÉ ()	0.0	NTU	5.	NTU
CONDUCTIVITY/CONDUCTIVITÉ ()	239.	USIE/CM		USIE/CM
HARDNESS,CALCULATED/DURETÉ CALCULÉE (CACO3)	73.5	MG/L	200	MG/L
CALCIUM/CALCIUM (CA)	20.8	MG/L	200	MG/L
MAGNESIUM/MAGNESIUM (MG)	5.24	MG/L	150	MG/L
SODIUM/SODIUM (NA)	15.6	MG/L	270	MG/L
POTASSIUM/POTASSIUM (K)	2.16	MG/L		MG/L
CHLORIDE/CHLORURE (CL-)	32.4	MG/L	250	MG/L
SULFATE/SULFATE (SO4)	10.0	MG/L	500	MG/L
FLUORIDE/FLUORURE (F-)	L .10	MG/L	1.5	MG/L
NITRATE-NITRITE/NITRATE-NITRITE (N)	4.4	MG/L	10	MG/L
IRON/FER (FE)	T .038	MG/L	.300	MG/L
MANGANESE/MANGANESE (MN)	T -.002	MG/L	0.05	MG/L
COPPER/CUIVRE (CU)	.059	MG/L	1.0	MG/L
ZINC/ZINC (ZN)	.013	MG/L	5.0	MG/L
LEAD/PLOMB (PB)	T 0.2	UG/L	50.	UG/L
NITRITE/NITRITE (N)	T .01	MG/L		MG/L

14

REMARKS/
REMARQUES:

* INDICATES GREATER THAN ACCEPTABLE LIMIT / VEUT DIRE PLUS GRAND QUE LA LIMITE ACCEPTABLE

PROP NO/NO. DE PROJET: 102
EVENT NO/ÉVENEMENT: 83

PROP NAME/NOM DE PROJET:
NB DOMESTIC WATER SUPPLY

MANAGER/DIRECTEUR DE PROJET:
GEORGE RICHARD

STATION NUMBER/
NUMÉRO DE STATION:
ZVROBICHAUD

LAB NO/NO. DE LAB: 5115g

FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806083

DATE DUE: 88.08.08
DATE REC: 88.07.25
DATE FWD/ 88.08.22
DATE D'ENVOI:

DAYS TURNAROUND/
JOURS AU LABORATOIRE:
28

DEPT. OF MUNICIPAL AFFAIRS AND ENVIRONMENT WELL WATER CHEMISTRY REPORT/

RAPPORT D'ANALYSE CHIMIQUE D'EAU DE PUITS, DEPT. DES AFFAIRES MUNICIPALES ET DE L'ENVIRONNEMENT

NAME/NOM:

Lois Hebert

ADDRESS/ADRESSE:

C.P. 70,
Shippagan N.B
E8S 2J5

PHONE #/# TÉLÉPHONE:

DATE/DATE: 88/07/25
TIME/TEMPS:

FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806084

L MEANS LESS THAN/
MOINS QUE
G MEANS GREATER THAN/
PLUS QUE
A MEANS APPROXIMATE/
APPROXIMATIF

15

REMARKS/
REMARQUES:

CHEMICAL TEST/ ANALYSE CHIMIQUE		YOUR WELL / VOTRE PUITS RESULTS/ RÉSULTATS	UNITS/ UNITÉS	MAXIMUM ACCEPTABLE LIMITS/ LIMITES MAXIMALES ACCEPTABLES CONCENTRATION	UNITS/UNITÉS
PH/PH ()		7.03	PH	6.5 - 8.5	PH
ALKALINITY,TOTAL/ALKALINITÉ TOTALE (CACO3)		65.48	MG/L	30 - 500	MG/L
TURBITITY/TURBIDITÉ ()	*	13.8	NTU	5.	NTU
CONDUCTIVITY/CONDUCTIVITÉ ()		305.	USIE/CM		USIE/CM
HARDNESS,CALCULATED/DURETÉ CALCULÉE (CACO3)		105.4	MG/L	200	MG/L
CALCIUM/CALCIUM (CA)		32.4	MG/L	200	MG/L
MAGNESIUM/MAGNESIUM (MG)		5.94	MG/L	150	MG/L
SODIUM/SODIUM (NA)		15.2	MG/L	270	MG/L
POTASSIUM/POTASSIUM (K)		2.65	MG/L		MG/L
CHLORIDE/CHLORURE (CL-)		30.8	MG/L	250	MG/L
SULFATE/SULFATE (SO4)		10.9	MG/L	500	MG/L
FLUORIDE/FLUORURE (F-)		L .10	MG/L	1.5	MG/L
NITRATE-NITRITE/NITRATE-NITRITE (N)		5.9	MG/L	10	MG/L
IRON/FER (FE)	*	3.34	MG/L	.300	MG/L
MANGANESE/MANGANESE (MN)		.026	MG/L	0.05	MG/L
COPPER/CUIVRE (CU)		.340	MG/L	1.0	MG/L
ZINC/ZINC (ZN)		.310	MG/L	5.0	MG/L
LEAD/PLOMB (PB)		9.0	UG/L	50.	UG/L
NITRITE/NITRITE (N)		T .01	MG/L		MG/L

PROP NO/NO. DE PROJET: 102
EVENT NO/ÉVENEMENT: 83

PROP NAME/NOM DE PROJET:
NB DOMESTIC WATER SUPPLY

MANAGER/DIRECTEUR DE PROJET:
GEORGE RICHARD

STATION NUMBER/
NUMÉRO DE STATION:
ZEINAHEBERT

LAB NO/NO. DE LAB: 5116g

FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806084

DATE DUE: 88.08.08
DATE REC: 88.07.25
DATE FWD/ 88.08.22
DATE D'ENVOI:

DAYS TURNAROUND/
JOURS AU LABORATOIRE:
28

* INDICATES GREATER THAN ACCEPTABLE LIMIT / VEUT DIRE PLUS GRAND QUE LA LIMITE ACCEPTABLE

DEPT. OF MUNICIPAL AFFAIRS AND ENVI...MENT WELL WATER CHEMISTRY REPORT/
RAPPORT D'ANALYSE CHIMIQUE D'EAU DE PUITS, DEPT. DES AFFAIRES MUNICIPALES ET DE L'ENVIRONNEMENT

NAME/NOM:
Donat L. Hebert
ADDRESS/ADRESSE:
C.P. 724
Shippogan, N.B.
E0B 2P0

PHONE #/# TÉLÉPHONE:

DATE/DATE: 07/07/88
TIME/TEMPS: 1425 hours

FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806070

L MEANS LESS THAN/
MOINS QUE
G MEANS GREATER THAN/
PLUS QUE
A MEANS APPROXIMATE/
APPROXIMATIF

(16)

Sample 14

CHEMICAL TEST/ ANALYSE CHIMIQUE		YOUR WELL / VOTRE PUITS RESULTS/ RÉSULTATS	UNITS/ UNITÉS	MAXIMUM ACCEPTABLE LIMITS/ LIMITES MAXIMALES ACCEPTABLES CONCENTRATION	UNITS/UNITÉS
PH/PH ()		6.01	PH	6.5 - 8.5	PH
ALKALINITY,TOTAL/ALKALINITÉ TOTALE (CACO3)		7.34	MG/L	30 - 500	MG/L
TURBITITY/TURBIDITÉ ()		1.2	NTU	5.	NTU
CONDUCTIVITY/CONDUCTIVITÉ ()		62.8	USIE/CM		USIE/CM
HARDNESS,CALCULATED/DURETÉ CALCULÉE (CACO3)		9.6	MG/L	200	MG/L
CALCIUM/CALCIUM (CA)		2.63	MG/L	200	MG/L
MAGNESIUM/MAGNESIUM (MG)		.737	MG/L	150	MG/L
SODIUM/SODIUM (NA)		7.39	MG/L	270	MG/L
POTASSIUM/POTASSIUM (K)		.410	MG/L		MG/L
CHLORIDE/CHLORURE (CL-)		12.1	MG/L	250	MG/L
SULFATE/SULFATE (SO4)		6.3	MG/L	500	MG/L
FLUORIDE/FLUORURE (F-)		L 0.10	MG/L	1.5	MG/L
NITRATE-NITRITE/NITRATE-NITRITE (N)		.01	MG/L	10	MG/L
IRON/FER (FE)	*	.692	MG/L	.300	MG/L
MANGANESE/MANGANESE (MN)	*	.925	MG/L	0.05	MG/L
COPPER/CUIVRE (CU)		.042	MG/L	1.0	MG/L
ZINC/ZINC (ZN)		T .006	MG/L	5.0	MG/L
LEAD/PLOMB (PB)		4.5	UG/L	50.	UG/L

PROP NO/NO. DE PROJET: 102
EVENT NO/ÉVENEMENT: 79

PROP NAME/NOM DE PROJET:
NB DOMESTIC WATER SUPPLY

MANAGER/DIRECTEUR DE PROJET:
GEORGE RICHARD

STATION NUMBER/
NUMÉRO DE STATION:
ZDONATHEBERT

LAB NO/NO. DE LAB: 4935g

FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806070

DATE DUE: 88.08.03
DATE REC: 88.07.20
DATE FWD/ 88.08.09
DATE D'ENVOI:

DAYS TURNAROUND/
JOURS AU LABORATOIRE:
20

REMARKS/
REMARQUES:
* INDICATES GREATER THAN ACCEPTABLE LIMIT / VEUT DIRE PLUS GRAND QUE LA LIMITE ACCEPTABLE

DEPT. OF MUNICIPAL AFFAIRS AND EN JNMENT WELL WATER CHEMISTRY REPORT/
RAPPORT D'ANALYSE CHIMIQUE D'EAU DE PUITS, DEPT. DES AFFAIRES MUNICIPALES ET DE L'ENVIRONNEMENT

NAME/NOM:
Sylvain Hebert

ADDRESS/ADRESSE:
C.P. 90
Shippagan, N.B.
E0G 2X0

PHONE #/# TÉLÉPHONE:

DATE/DATE: 88/07/88
TIME/TEMPS:

FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806085

L MEANS LESS THAN/
MOINS QUE
G MEANS GREATER THAN/
PLUS QUE
A MEANS APPROXIMATE/
APPROXIMATIF

CHEMICAL TEST/ ANALYSE CHIMIQUE		YOUR WELL / VOTRE PUITS RESULTS/ RÉSULTATS	UNITS/ UNITÉS	MAXIMUM ACCEPTABLE LIMITS/ LIMITES MAXIMALES ACCEPTABLES CONCENTRATION	UNITS/UNITÉS
PH/PH ()		6.25	PH	6.5 - 8.5	PH
ALKALINITY,TOTAL/ALKALINITÉ TOTALE (CACO3)		19.97	MG/L	30 - 500	MG/L
TURBITITY/TURBIDITÉ ()		0.5	NTU	5.	NTU
CONDUCTIVITY/CONDUCTIVITÉ ()		103.9	USIE/CM		USIE/CM
HARDNESS,CALCULATED/DURETÉ CALCULÉE (CACO3)		24.2	MG/L	200	MG/L
CALCIUM/CALCIUM (CA)		7.18	MG/L	200	MG/L
MAGNESIUM/MAGNESIUM (MG)		1.53	MG/L	150	MG/L
SODIUM/SODIUM (NA)		9.55	MG/L	270	MG/L
POTASSIUM/POTASSIUM (K)		.493	MG/L		MG/L
CHLORIDE/CHLORURE (CL-)		14.2	MG/L	250	MG/L
SULFATE/SULFATE (SO4)		7.3	MG/L	500	MG/L
FLUORIDE/FLUORURE (F-)		L .10	MG/L	1.5	MG/L
NITRATE-NITRITE/NITRATE-NITRITE (N)		.01	MG/L	10	MG/L
IRON/FER (FE)		.193	MG/L	.300	MG/L
MANGANESE/MANGANESE (MN)		* .074	MG/L	0.05	MG/L
COPPER/CUIVRE (CU)		.141	MG/L	1.0	MG/L
ZINC/ZINC (ZN)		T .009	MG/L	5.0	MG/L
LEAD/PLOMB (PB)		T 0.8	UG/L	50.	UG/L

(17)

REMARKS/
REMARQUES:

* INDICATES GREATER THAN ACCEPTABLE LIMIT / VEUT DIRE PLUS GRAND QUE LA LIMITE ACCEPTABLE

PROP NO/NO. DE PROJET: 102
EVENT NO/ÉVENEMENT: 83

PROP NAME/NOM DE PROJET:
NB DOMESTIC WATER SUPPLY

MANAGER/DIRECTEUR DE PROJET:
GEORGE RICHARD

STATION NUMBER/
NUMÉRO DE STATION:
ZSYLVAINHEBERT

LAB NO/NO. DE LAB: 5117g

FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806085

DATE DUE: 88.08.08
DATE REC: 88.07.25
DATE FWD/ 88.08.22
DATE D'ENVOI:

DAYS TURNAROUND/
JOURS AU LABORATOIRE:
28

DEPT. OF MUNICIPAL AFFAIRS AND ENV...ENT WELL WATER CHEMISTRY REPORT/
RAPPORT D'ANALYSE CHIMIQUE D'EAU DE PUITS, DEPT. DES AFFAIRES MUNICIPALES ET DE L'ENVIRONNEMENT

NAME/NOM:
Benoit Savoie
ADDRESS/ADRESSE:
C.P. 1146
Shippagan, N.B.
E0B 2P0

PHONE #/# TÉLÉPHONE:
336-4595
DATE/DATE: 12/07/88
TIME/TEMPS: 2205 hours

FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806072

L MEANS LESS THAN/
MOINS QUE
G MEANS GREATER THAN/
PLUS QUE
A MEANS APPROXIMATE/
APPROXIMATIF

(18)

Sample 18

CHEMICAL TEST/ ANALYSE CHIMIQUE	YOUR WELL / VOTRE PUITS RESULTS/ RÉSULTATS	UNITS/ UNITÉS	MAXIMUM ACCEPTABLE LIMITS/ LIMITES MAXIMALES ACCEPTABLES CONCENTRATION	UNITS/UNITÉS
PH/PH ()	6.70	PH	6.5 - 8.5	PH
ALKALINITY,TOTAL/ALKALINITÉ TOTALE (CACO3)	34.41	MG/L	30 - 500	MG/L
TURBITITY/TURBIDITÉ ()	.3	NTU	5.	NTU
CONDUCTIVITY/CONDUCTIVITÉ ()	130.	USIE/CM		USIE/CM
HARDNESS,CALCULATED/DURETÉ CALCULÉE (CACO3)	39.6	MG/L	200	MG/L
CALCIUM/CALCIUM (CA)	12.2	MG/L	200	MG/L
MAGNESIUM/MAGNESIUM (MG)	2.22	MG/L	150	MG/L
SODIUM/SODIUM (NA)	8.89	MG/L	270	MG/L
POTASSIUM/POTASSIUM (K)	.473	MG/L		MG/L
CHLORIDE/CHLORURE (CL-)	14.7	MG/L	250	MG/L
SULFATE/SULFATE (SO4)	5.8	MG/L	500	MG/L
FLUORIDE/FLUORURE (F-)	L 0.10	MG/L	1.5	MG/L
NITRATE-NITRITE/NITRATE-NITRITE (N)	T .01	MG/L	10	MG/L
IRON/FER (FE)	.085	MG/L	.300	MG/L
MANGANESE/MANGANESE (MN)	T .009	MG/L	0.05	MG/L
COPPER/CUIVRE (CU)	.033	MG/L	1.0	MG/L
ZINC/ZINC (ZN)	T -.005	MG/L	5.0	MG/L
LEAD/PLOMB (PB)	T .9	UG/L	50.	UG/L

PROP NO/NO. DE PROJET: 102
EVENT NO/ÉVENEMENT: 81

PROP NAME/NOM DE PROJET:
NB DOMESTIC WATER SUPPLY

MANAGER/DIRECTEUR DE PROJET:
GEORGE RICHARD

STATION NUMBER/
NUMÉRO DE STATION:
ZBENOITSAVOIE

LAB NO/NO. DE LAB: 4990g

FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806072

DATE DUE: 88.08.04
DATE REC: 88.07.21
DATE FWD/ 88.08.09
DATE D'ENVOI:

DAYS TURNAROUND/
JOURS AU LABORATOIRE:
19

REMARKS/
REMARQUES:
* INDICATES GREATER THAN ACCEPTABLE LIMIT / VEUT DIRE PLUS GRAND QUE LA LIMITE ACCEPTABLE

DEPT. OF MUNICIPAL AFFAIRS AND ENV...ENT WELL WATER CHEMISTRY REPORT/
RAPPORT D'ANALYSE CHIMIQUE D'EAU DE PUITS, DEPT. DES AFFAIRES MUNICIPALES ET DE L'ENVIRONNEMENT

NAME/NOM:
mer J. Arsenault
ADDRESS/ADRESSE:
.P. 1061,
ippagan, N.B.
0B 2P0

PHONE #/# TÉLÉPHONE:

DATE/DATE: 13/07/88
TIME/TEMPS: 0920 hours

FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806068

L MEANS LESS THAN/
MOINS QUE
G MEANS GREATER THAN/
PLUS QUE
A MEANS APPROXIMATE/
APPROXIMATIF

(19)

Sample 19

CHEMICAL TEST/ ANALYSE CHIMIQUE	YOUR WELL / VOTRE PUITS RESULTS/ RÉSULTATS	UNITS/ UNITÉS	MAXIMUM ACCEPTABLE LIMITS/ LIMITES MAXIMALES ACCEPTABLES CONCENTRATION	UNITS/UNITÉS
PH/PH ()	6.16	PH	6.5 - 8.5	PH
ALKALINITY, TOTAL/ALKALINITÉ TOTALE (CACO3)	11.62	MG/L	30 - 500	MG/L
TURBITITY/TURBIDITÉ ()	.2	NTU	5.	NTU
CONDUCTIVITY/CONDUCTIVITÉ ()	98.4	USIE/CM		USIE/CM
HARDNESS, CALCULATED/DURETÉ CALCULÉE (CACO3)	21.2	MG/L	200	MG/L
CALCIUM/CALCIUM (CA)	6.30	MG/L	200	MG/L
MAGNESIUM/MAGNESIUM (MG)	1.34	MG/L	150	MG/L
SODIUM/SODIUM (NA)	9.31	MG/L	270	MG/L
POTASSIUM/POTASSIUM (K)	.490	MG/L		MG/L
CHLORIDE/CHLORURE (CL-)	20.5	MG/L	250	MG/L
SULFATE/SULFATE (SO4)	7.7	MG/L	500	MG/L
FLUORIDE/FLUORURE (F-)	L 0.10	MG/L	1.5	MG/L
NITRATE-NITRITE/NITRATE-NITRITE (N)	.01	MG/L	10	MG/L
IRON/FER (FE)	T .036	MG/L	.300	MG/L
MANGANESE/MANGANESE (MN)	T .007	MG/L	0.05	MG/L
COPPER/CUIVRE (CU)	.124	MG/L	1.0	MG/L
ZINC/ZINC (ZN)	.051	MG/L	5.0	MG/L
LEAD/PLOMB (PB)	T .5	UG/L	50.	UG/L

PROP NO/NO. DE PROJET: 102
EVENT NO/ÉVENEMENT: 79

PROP NAME/NOM DE PROJET:
NB DOMESTIC WATER SUPPLY

MANAGER/DIRECTEUR DE PROJET:
GEORGE RICHARD

STATION NUMBER/
NUMÉRO DE STATION:
ZOMERARSENAULT

LAB NO/NO. DE LAB: 4933g

FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806068

DATE DUE: 88.08.03
DATE REC: 88.07.20
DATE FWD/ 88.08.09
DATE D'ENVOI:

DAYS TURNAROUND/
JOURS AU LABORATOIRE:
20

REMARKS/
REMARQUES:
* INDICATES GREATER THAN ACCEPTABLE LIMIT / VEUT DIRE PLUS GRAND QUE LA LIMITE ACCEPTABLE

DEPT. OF MUNICIPAL AFFAIRS AND ENV. ENT WELL WATER CHEMISTRY REPORT/
RAPPORT D'ANALYSE CHIMIQUE D'EAU DE PUITS, DEPT. DES AFFAIRES MUNICIPALES ET DE L'ENVIRONNEMENT

NAME/NOM:
Albert Roussel
ADDRESS/ADRESSE:
P. 627
Tuppagan, N.B.
E 1W0

PHONE #/# TÉLÉPHONE:

DATE/DATE: 11/07/88
TIME/TEMPS: 1840hours

FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806056

L MEANS LESS THAN/
MOINS QUE
G MEANS GREATER THAN/
PLUS QUE
A MEANS APPROXIMATE/
APPROXIMATIF

20
Sample 30

CHEMICAL TEST/ ANALYSE CHIMIQUE	YOUR WELL / VOTRE PUITS RESULTS/ RÉSULTATS	UNITS/ UNITÉS	MAXIMUM ACCEPTABLE LIMITS/ LIMITES MAXIMALES ACCEPTABLES CONCENTRATION	UNITS/UNITÉS
PH/PH ()	5.41	PH	6.5 - 8.5	PH
ALKALINITY,TOTAL/ALKALINITÉ TOTALE (CACO3)	5.02	MG/L	30 - 500	MG/L
TURBITITY/TURBIDITÉ ()	1.0	NTU	5.	NTU
CONDUCTIVITY/CONDUCTIVITÉ ()	66.9	USIE/CM		USIE/CM
HARDNESS,CALCULATED/DURETÉ CALCULÉE (CACO3)	7.5	MG/L	200	MG/L
CALCIUM/CALCIUM (CA)	1.17	MG/L	200	MG/L
MAGNESIUM/MAGNESIUM (MG)	1.11	MG/L	150	MG/L
SODIUM/SODIUM (NA)	7.81	MG/L	270	MG/L
POTASSIUM/POTASSIUM (K)	.712	MG/L		MG/L
CHLORIDE/CHLORURE (CL-)	11.9	MG/L	250	MG/L
SULFATE/SULFATE (SO4)	5.7	MG/L	500	MG/L
FLUORIDE/FLUORURE (F-)	L 0.10	MG/L	1.5	MG/L
NITRATE-NITRITE/NITRATE-NITRITE (N)	.03	MG/L	10	MG/L
IRON/FER (FE)	.268	MG/L	.300	MG/L
MANGANESE/MANGANESE (MN)	.028	MG/L	0.05	MG/L
COPPER/CUIVRE (CU)	.093	MG/L	1.0	MG/L
ZINC/ZINC (ZN)	.017	MG/L	5.0	MG/L
LEAD/PLOMB (PB)	5.4	UG/L	50.	UG/L

PROP NO/NO. DE PROJET: 102
EVENT NO/ÉVENEMENT: 76

PROP NAME/NOM DE PROJET:
NB DOMESTIC WATER SUPPLY

MANAGER/DIRECTEUR DE PROJET:
GEORGE RICHARD

STATION NUMBER/
NUMÉRO DE STATION:
ZEROUSSEL

LAB NO/NO. DE LAB: 4763g

FIELD NUMBER/
NUMÉRO D'ÉCHANTILLON:
938806056

DATE DUE: 88.07.28
DATE REC: 88.07.14
DATE FWD/ 88.08.08
DATE D'ENVOI:

DAYS TURNAROUND/
JOURS AU LABORATOIRE:
25

REMARKS/
REMARQUES:
* INDICATES GREATER THAN ACCEPTABLE LIMIT / VEUT DIRE PLUS GRAND QUE LA LIMITE ACCEPTABLE

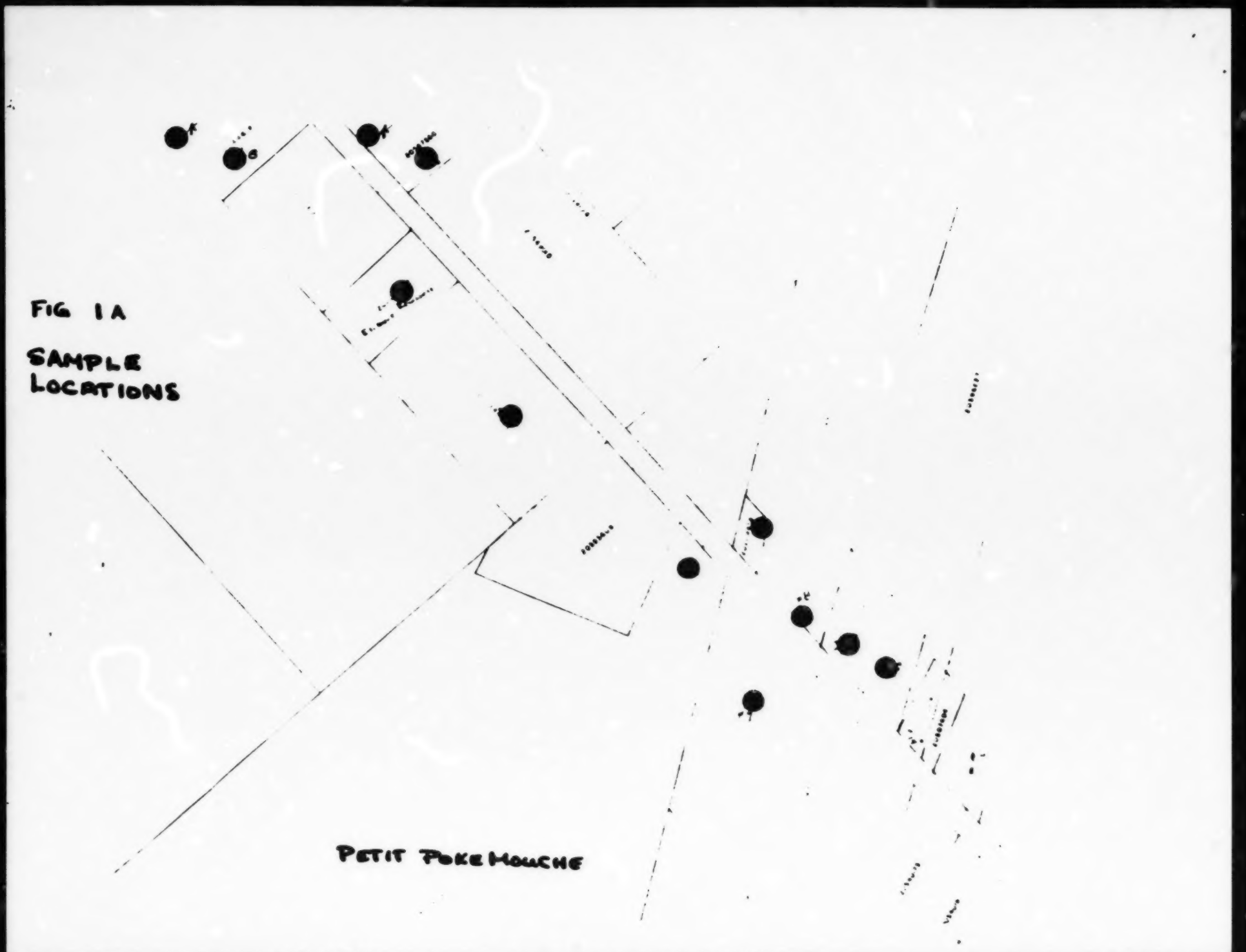
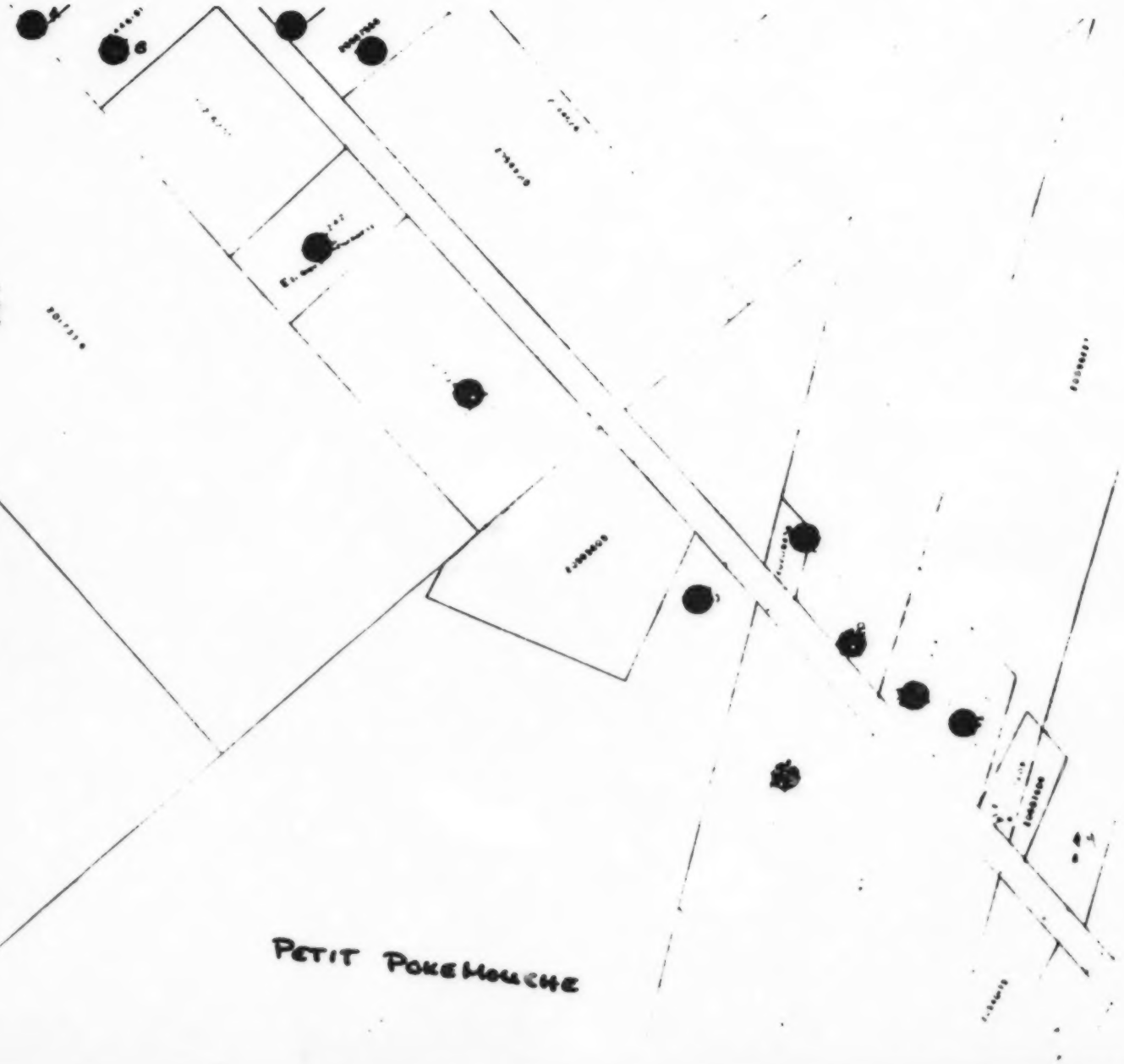


FIG 1A

SAMPLE LOCATIONS

FIG 2A

SODIUM CHLORIDE



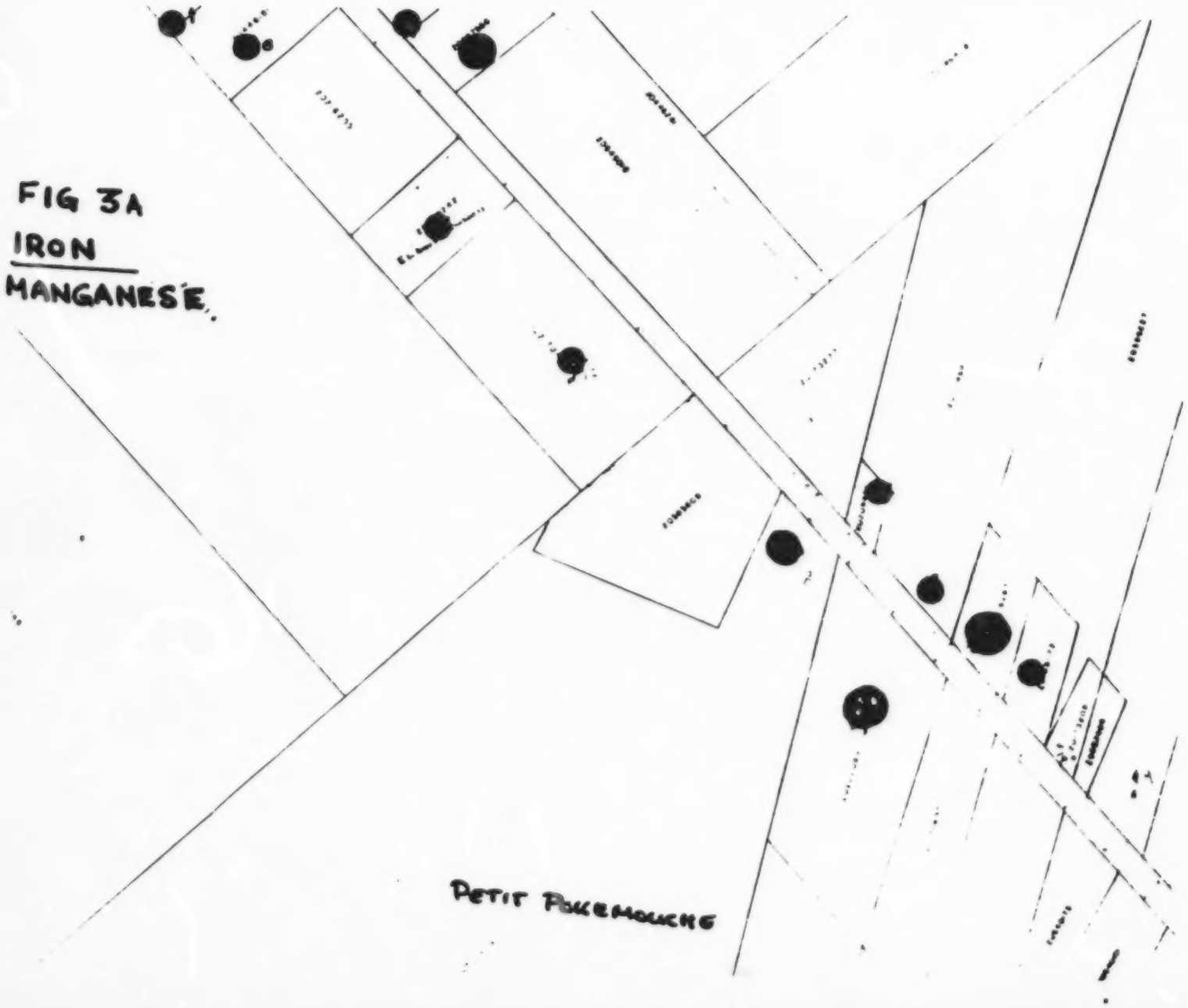


FIG 3A
IRON
MANGANESE
PETIT POLEMOUCHE

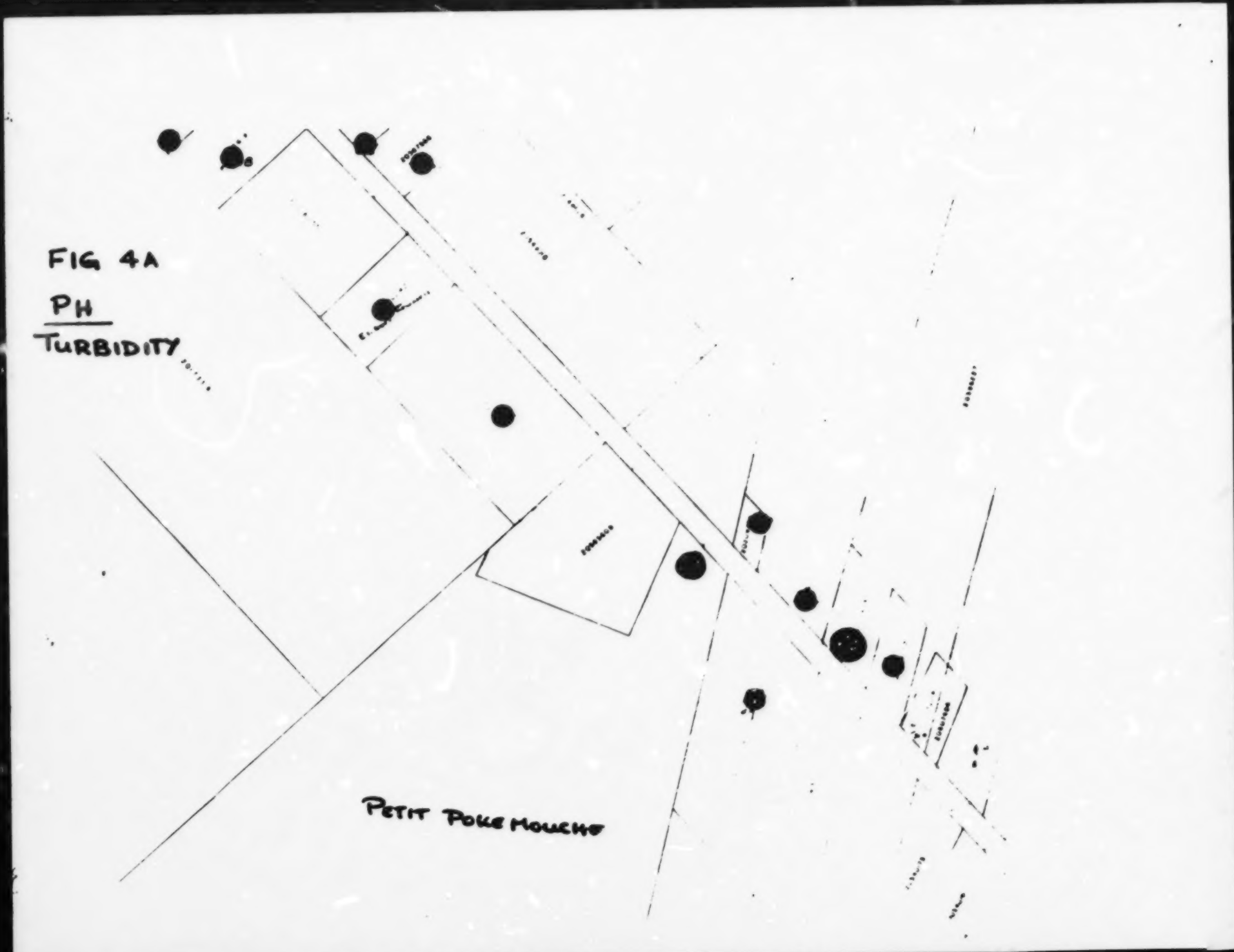


FIG 4A
PH
TURBIDITY
PETIT POKE MOUCHE

FIG 5A

NITRATE

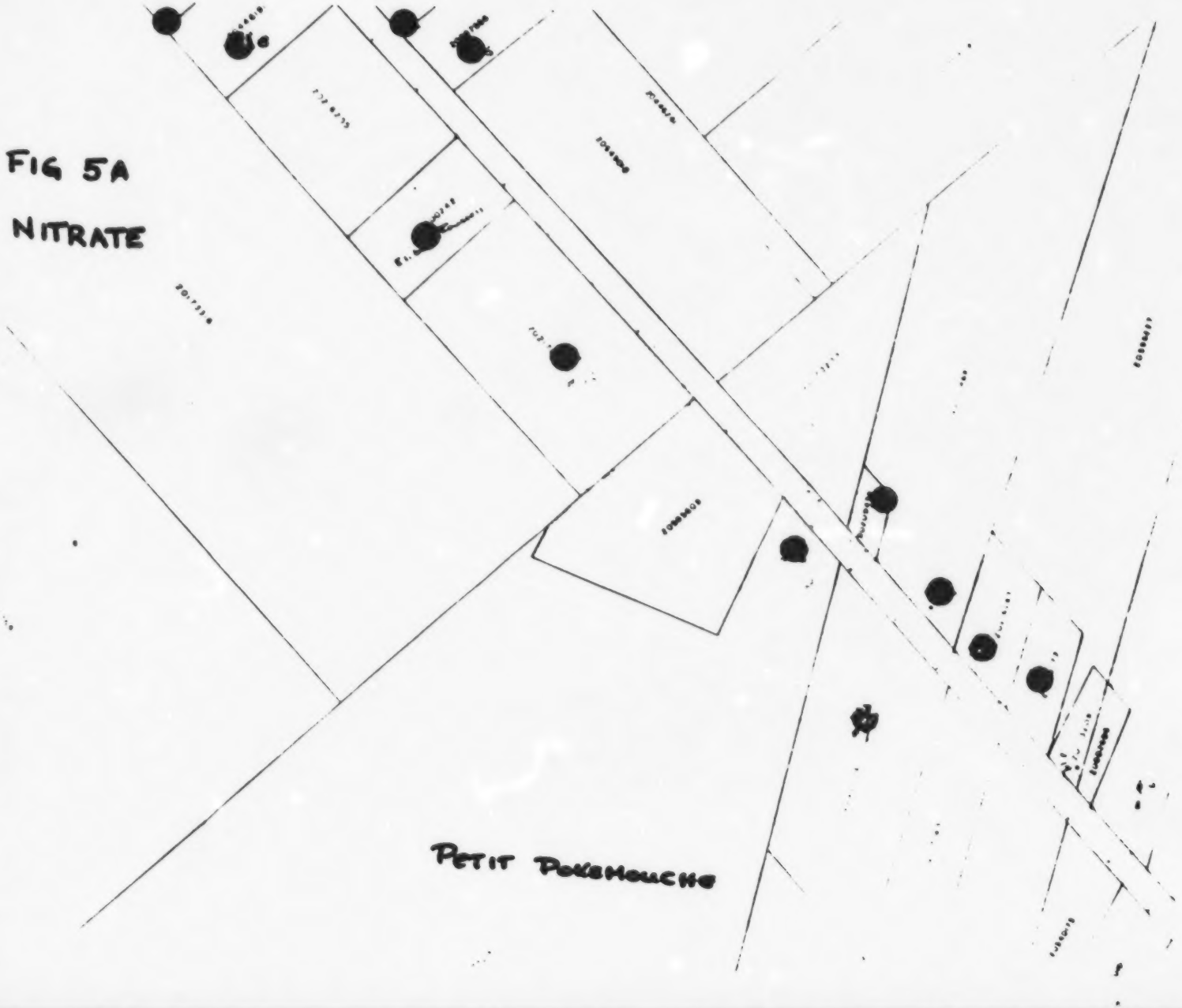
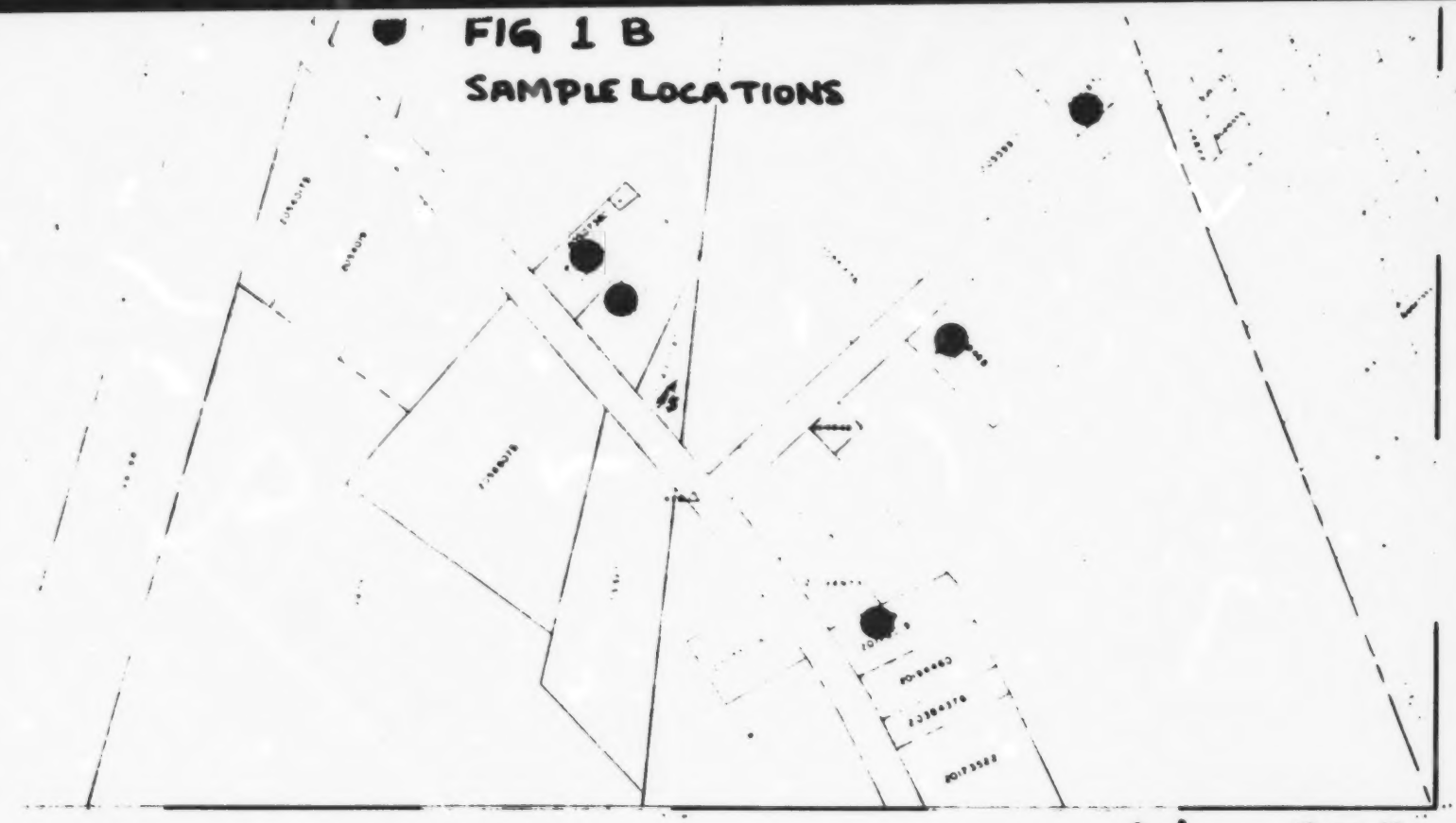


FIG 1 B

SAMPLE LOCATIONS



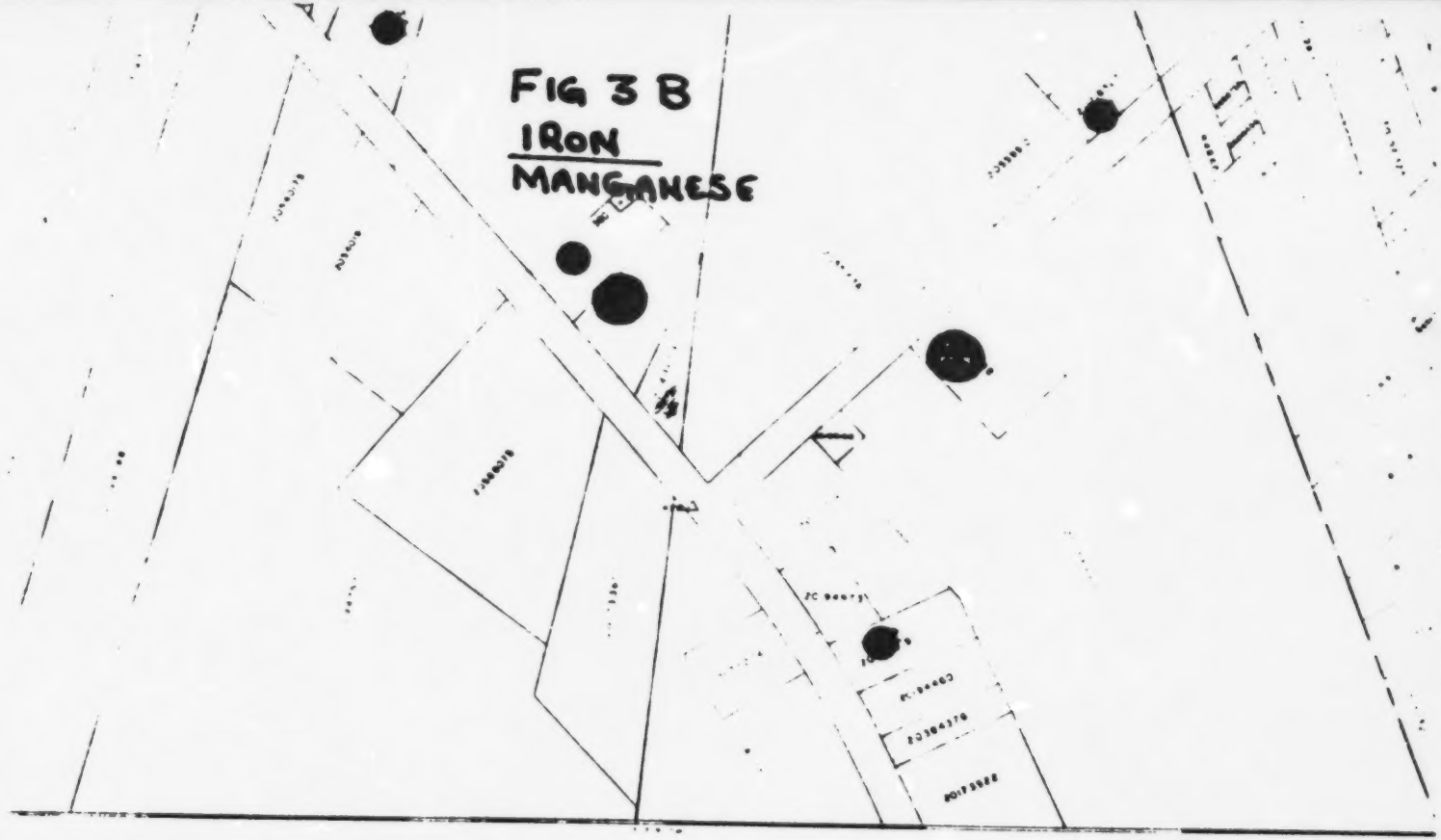
SCALE 1:2000 ÉCHELLE

PETIT POUGHOUCHE

REFERENCE LÉGENDE

MAP "B"

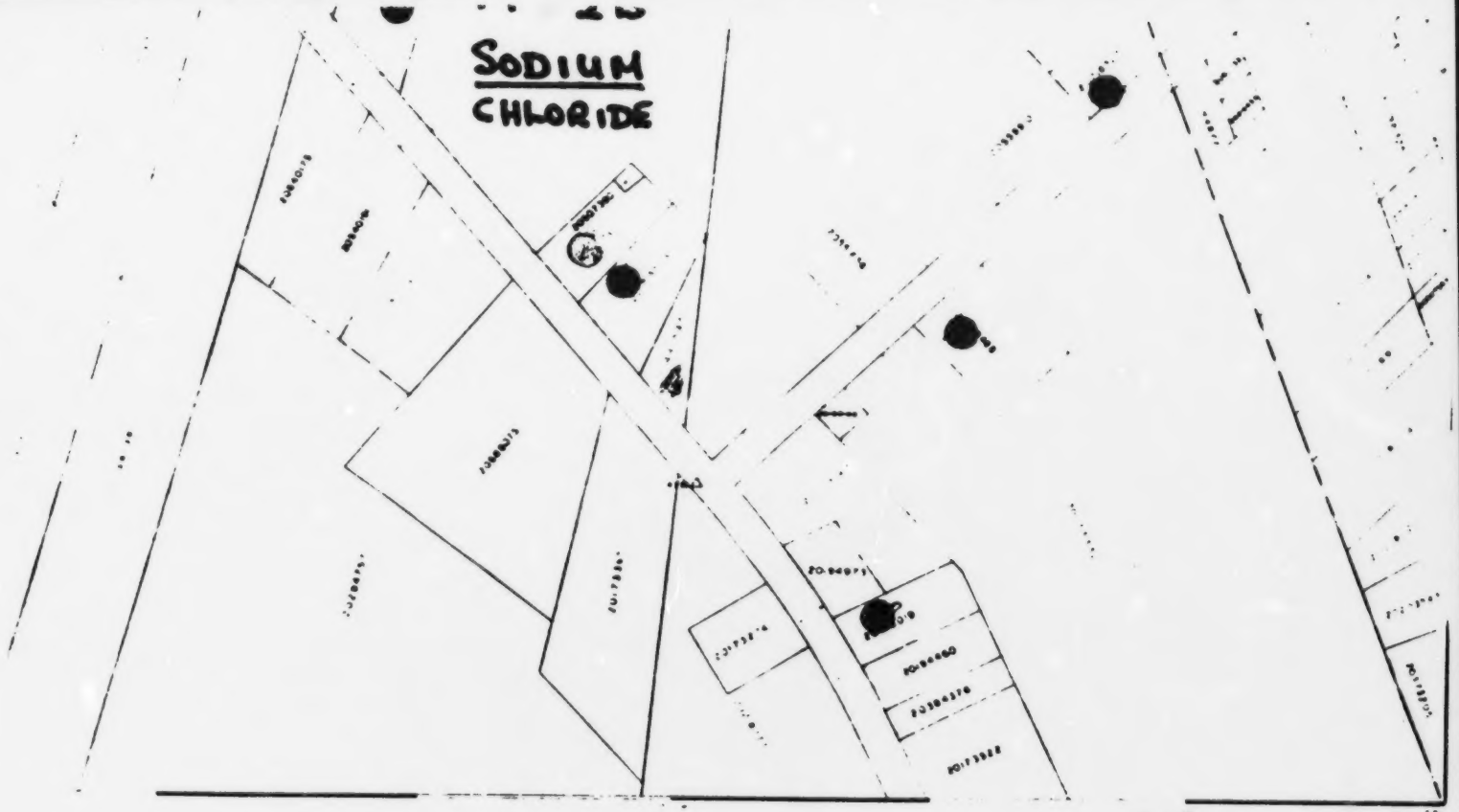
FIG 3 B
IRON
MANGANESE



SCALE 1:2000 ÉCHELLE PETIT POKEMOUCHE

REFERENCE LÉGENDE

MAP "B"

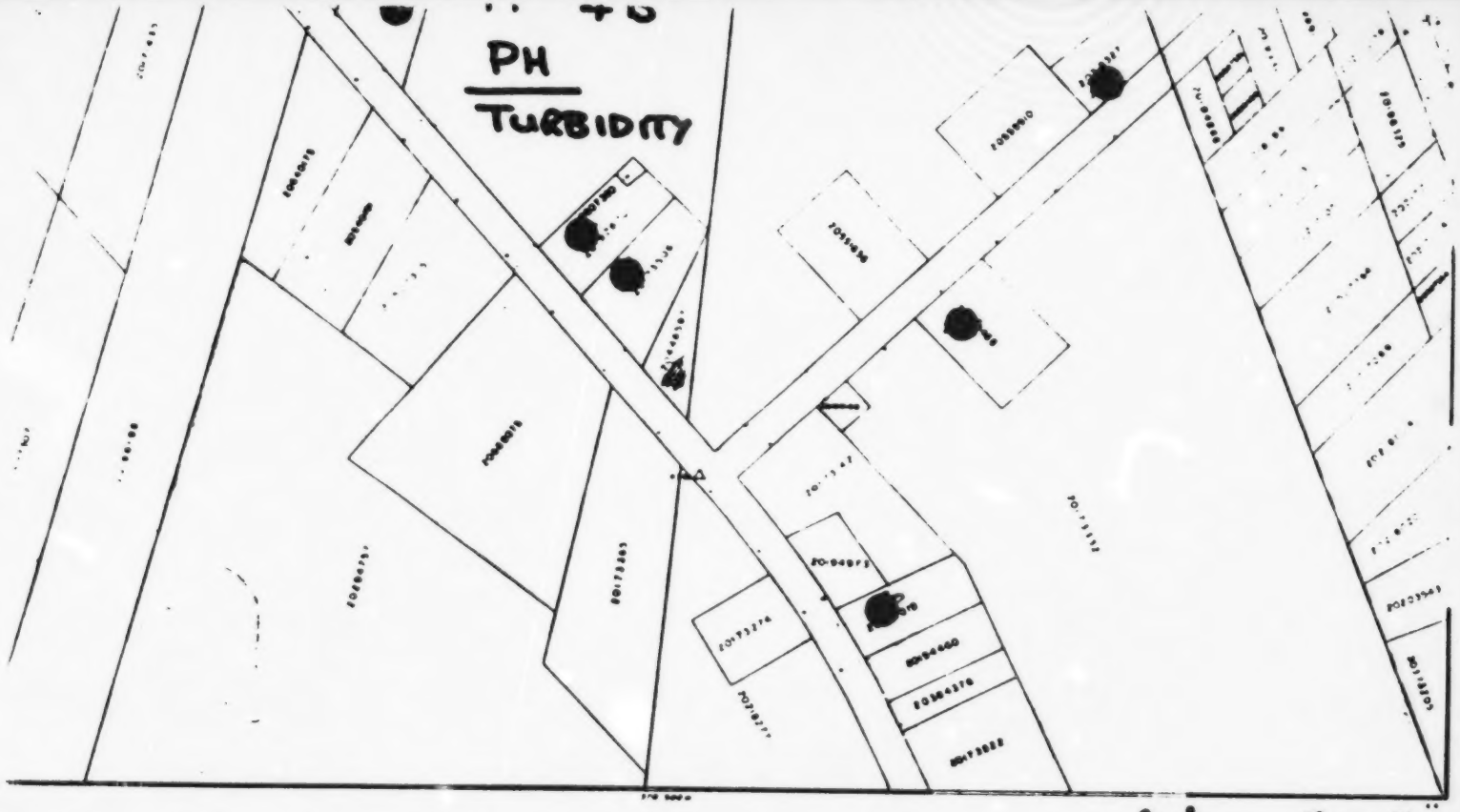


SCALE 1:2000 ÉCHELLE

PETIT PORTAGE

REFERENCE LÉGENDE

MAP "B"



SCALE 1:2000 ÉCHELLE PETIT POKEMOUCHE

REFERENCE LÉGENDE

MAP "B"

ALE 1:2000 ÉCHELLE PETIT POKEMOUCHE

REFERENCE LÉGENDE

MAP "B"

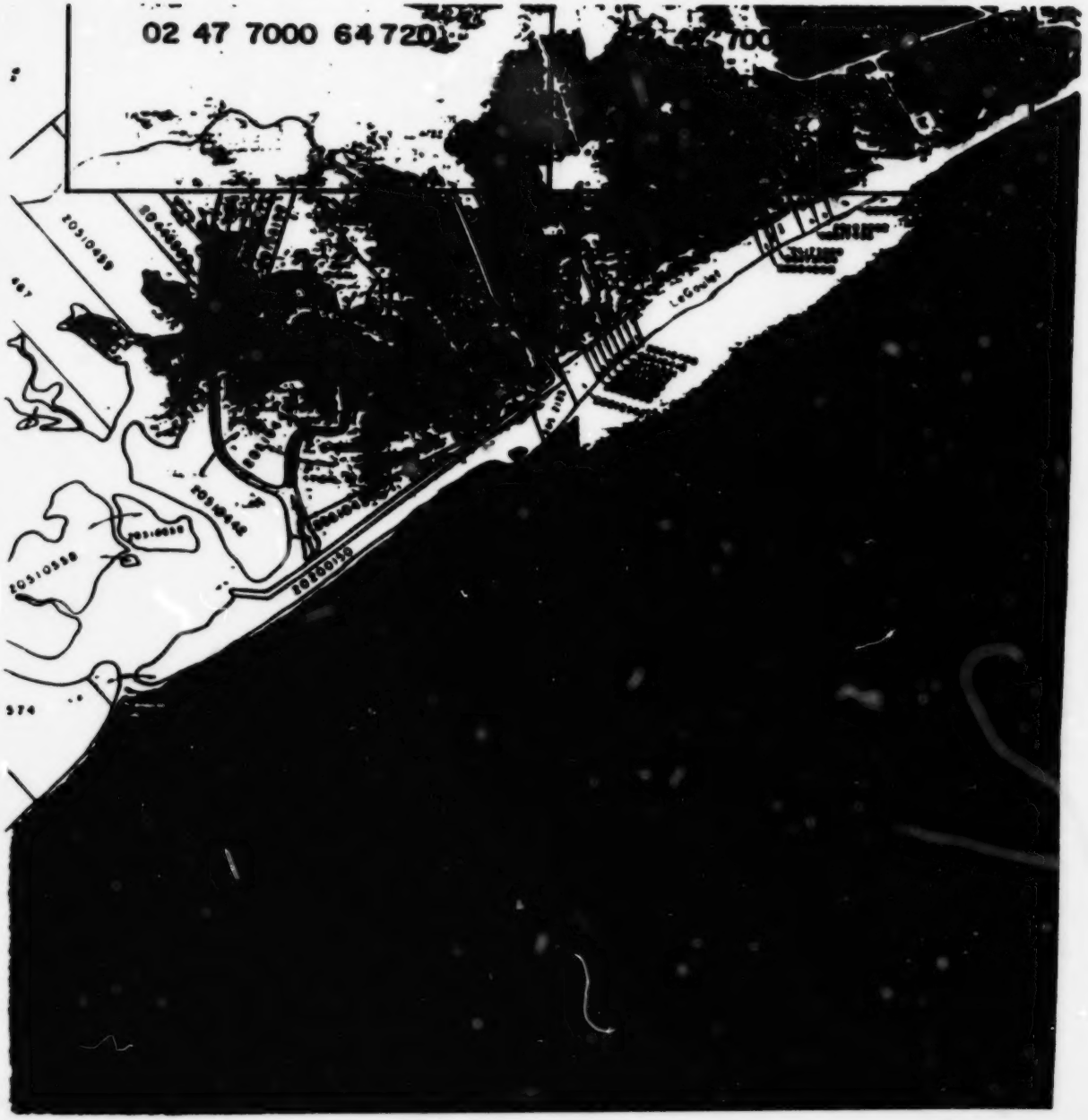
FIG 1C

FIG 2E

Fe
Mn

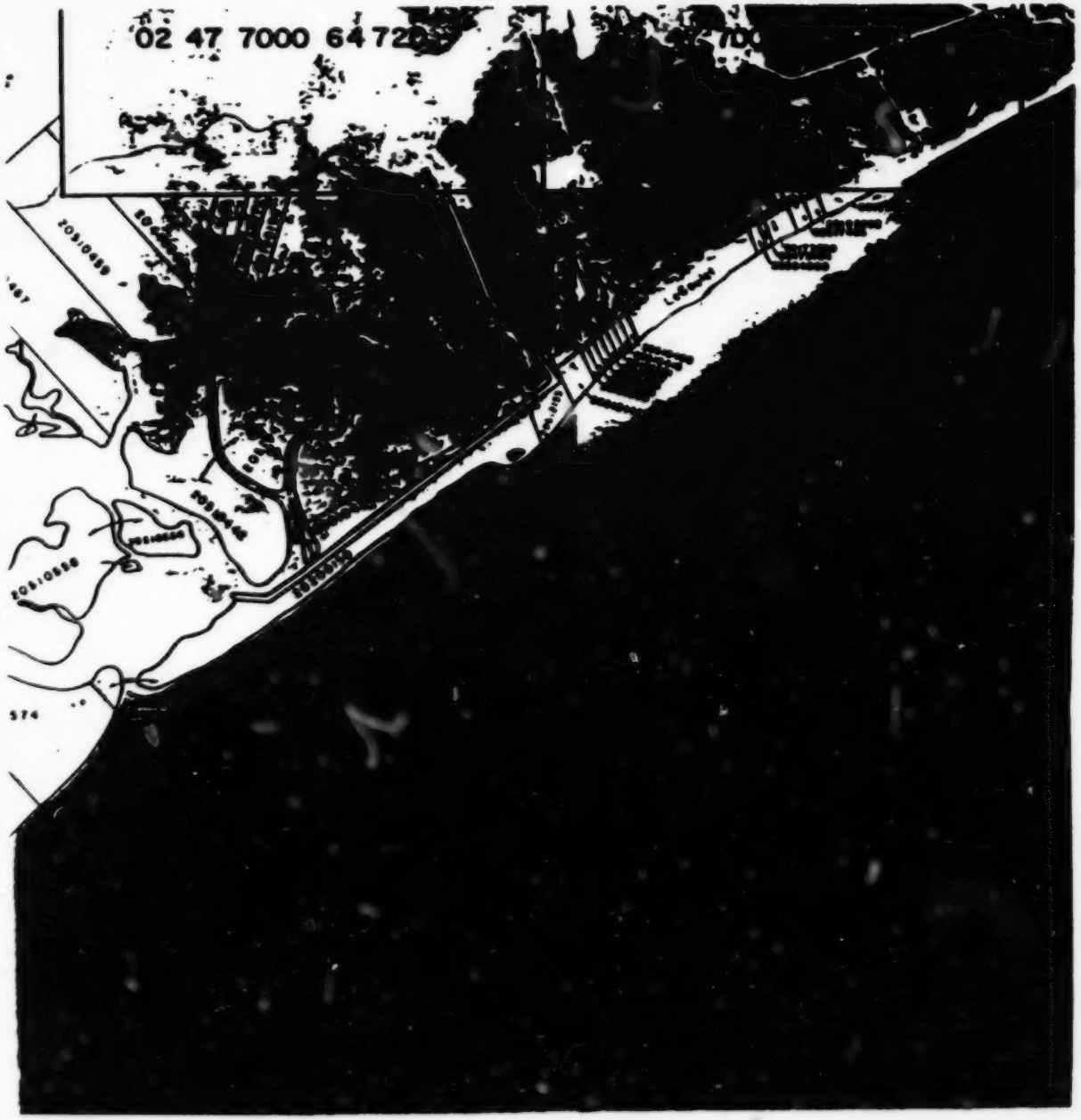
FIG 3C

FIG 4C



No.

Fig 5C



EXAMINATION OF WATER QUALITY

PROBLEMS IN THE COMMUNITY OF LEGOULET, N.B.

R.A. Brinsmead
October 1984

Groundwater Section
Water Resources Branch
New Brunswick Department of the Environment

EXAMINATION OF WATER QUALITY PROBLEMS IN THE COMMUNITY OF LE GOULET, N.B.

Background

On 4 July 1984, a well water sampling program was conducted at 30 residences in the unincorporated community of Le Goulet, N.B., south of Shippagan. Samples were collected for both chemical and bacterial analysis. At the same time, data was recorded on well characteristics, and residents' comments on water quality or problems were also sought. On 22 and 23 August 1984, the community was revisited and the results of the analyses were discussed with a number of the residents.

The community is serviced entirely by on-lot wells and septic systems. From the survey information and the very few well drillers' records available in the Department of the Environment files, the large majority of wells in the area are evidently hand-drilled holes ranging between about 4 and 8 metres (12 and 25 feet) in depth, and usually of about 5 cm (2 inch) diameter. Although there are no records of casing length for most of these wells, they are probably constructed mainly with short casings of 1.5-3 metre (5-10 feet) length, that are poorly seated into the rock.

Groundwater Quality

Iron and Manganese:

These wells produce shallow, recently recharged groundwater that characteristically has pH between about 6 and 7, or occasionally a little higher. The somewhat acidic water leaches iron and manganese from the bedrock, commonly resulting in moderately elevated concentrations of one or both of these metals in well water. This is the most frequently encountered natural quality problem in local water supplies, and causes staining of plumbing fixtures and of light-coloured laundry items. The heavy reliance on septic systems for sewage disposal might also be a contributing factor in the iron-manganese problem, as effluent waters from the tile beds are rich in fatty acids and deficient in oxygen, probably increasing the tendency of the shallow groundwater to leach the metals and hold them in solution.

Of the few machine-drilled wells encountered in the survey, those with about 9 m (30 feet) or more of casing, producing water that originated from between 9 and 18 m (30 and 60 feet) below the ground, were relatively free of iron and manganese contamination.

This phenomenon is probably partly a result of an increase in pH with longer residence time of water in the ground, which causes precipitation of the metals from solution. In addition, the deeper groundwater may be protected from infiltration of sewage wastes by the presence of impermeable shale layers, and may also be moving into the locality from relatively distant recharge areas upslope.

Salt:

Salt content of the well water throughout most of the community appears to be moderate, as the generally shallow wells do not penetrate the coastal salt water wedge that is likely present at greater depth. In fact, even in the few drilled wells that were sampled, with depths in the order of 12-18 m (40-60 feet) the salt content was conspicuously low. Salt contamination was encountered only in a very limited area in the eastern end of the community where four houses in a group have well water with chloride concentrations at or above the recommended limit. These water supplies also share the problems of pH below 6, and severely elevated iron and manganese concentrations.

Across the road and upslope from these contaminated supplies is a fish market with associated fish processing operation. The business includes substantial fish-salting activities, and one neighbor reported that salt arrives 'by the truck load'. The total salt volume used annually was not established, although salt in 40 kg bags was noted being stored at several locations, some outside and exposed to the weather. Inside were large tubs of fish in brine, salt fish stacked on palettes, and small piles of saturated salt spilled on the concrete floor. There being no sewers, the effluent from the operation presumably recharges into the ground. A small-diameter (1½") pipe originating from the building was observed leading to what appeared to be a rock drain.

The fish market is supplied with water from a well of 20 cm (8 inch) diameter, 16 m (52 feet) deep, with 8.5 m (28 feet) of casing. The quality of this water is good in terms of all measured parameters, presumably because of the longer than normal casing, and its position upslope from the point where contaminants enter the ground.

It is to be expected that the fish market is the source of the salt contamination in the downslope direction . Houses with wells just outside the anticipated path of the contaminant plume have good quality water, with no evidence of excess chloride. The high iron and manganese concentrations in these waters might also be attributable to chemical changes associated with organic materials in the effluent water from the fish market.

Hardness:

None of the sampled wells had hardness greater than the recommended limit of 200 mg/litre. Two of the houses in the group with salt problems had noticeably elevated hardness in the vicinity of 170 mg/litre. Hardness problems do not seem to be widespread.

Bacteria:

A number of the tested wells had elevated bacterial counts, some moderate and a few severe. In all cases where bacteria were detected, the counts were of total coliforms; no fecal coliform bacteria were detected. The occurrences of bacteria were scattered throughout the community, and no specific problem area was identified. The bacterially contaminated wells are all of the shallow, hand-drilled type, and the problem likely stems from leakage of surface water around the very short, poorly-sealed casings that are common in these wells. In at least two of the cases, bacterial contamination is occurring in hand-drilled wells that are 25 to 30 years old and may be associated with corrosion perforation of the casing after this length of time. In these two cases, it is reported that water quality problems started only in the past two or three years.

Alternative Solutions To The Problems

Water and Sewer Systems:

It is obvious that the existing problems could be eliminated by the installation of water distribution and sewage collection and treatment systems to service the entire community. However, developement of a local water source or construction of a sewage treatment facility dedicated to the community would require the creation of an administrative and maintenance infrastructure, and probably incorporation of the community as a village.

Water System Only:

Development of a local water source only would still require a management system to be established. The alternative of extending the Shippagan water supply into Le Goulet would have the advantage that Shippagan's existing supply already has a management infrastructure.

Sewage System Only:

Unless a sewage collection system could be connected to the existing Shippagan treatment facilities, installation of such a system would again require the establishment of a management infrastructure. A sewage system in any form would alleviate some pressures on groundwater quality, but would also leave many of the existing well construction and water quality problems unsolved.

Selective Upgrading of On-Lot Services:

The course of minimum action other than leaving the situation as it now exists, would be to encourage or require residents to assure that their septic systems and water wells meet minimum standards. This might be difficult with the septic systems, as there frequently is insufficient space for an adequately functioning system in areas of crowded development. It is likely, however, that some improvements could be made.

Residents with well problems could at a minimum be encouraged to construct machine-drilled wells of between 12 and 25 m (40 and 80 ft.) depth, with a minimum of 9 m (30 ft.) of casing. There is probably a fair chance of solving many of the water quality problems in this way. Anyone who ignored this advice would live with his water problems of his own free will. There would be some cases where this action would probably not solve the problems. In cases such as the one adjacent to the fish market, a small communal water supply with a well source remote from the point of contamination might be a viable solution.

Conclusions

1. There are widely scattered total coliform bacteria problems in Le Goulet that are probably a result of poor well construction.

2. There is widespread iron and manganese contamination of well water in the community largely because of the heavy reliance on very shallow wells that produce acidic groundwater, and possibly contributed to by insufficient natural capacity to assimilate sewage effluent.

3. There is localized, fairly heavy salt contamination associated with a fish market and processing operation in the eastern end of the community. No other salt contamination was encountered in wells sampled throughout the rest of the community, at depths up to about 18 m (60ft.).

4. Water samples from all of several drilled wells of 12-18 m (40-60 ft.) depth, with at least 9 m (30 ft.) of casing, gave test results with all parameters within recommended limits.

5. Installation of a sewage-collection system only, would likely leave numerous water quality problems unsolved.

6. Installation of water distribution system only, would solve all existing water quality problems in practical terms. Problems corollary to poorly functioning septic systems, such as sewage discharge into ditches, would remain unchanged.

7. If a local supply for a water system was desired, groundwater wells of adequate capacity and quality could likely be developed northwest of the residential developments. A properly supervised test-drilling program would be necessary.

8. Any testwells should be located judiciously relative to sites where garbage has been dumped.

9. In many cases, it should be possible to solve water quality problems using properly constructed on-lot wells.